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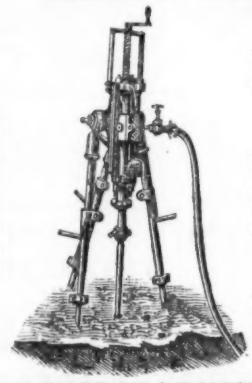

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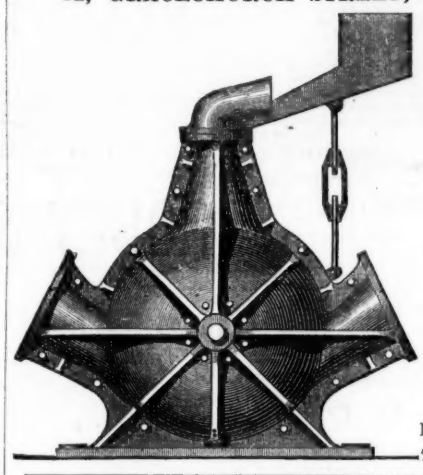

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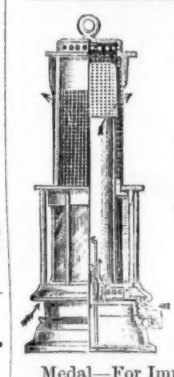

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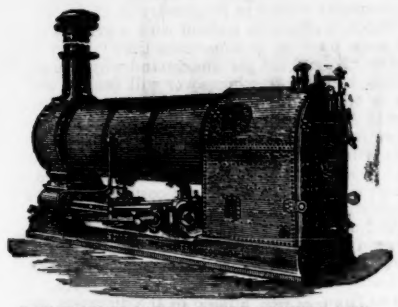

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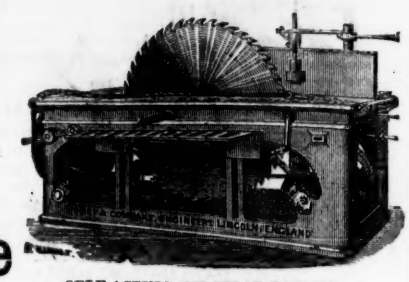

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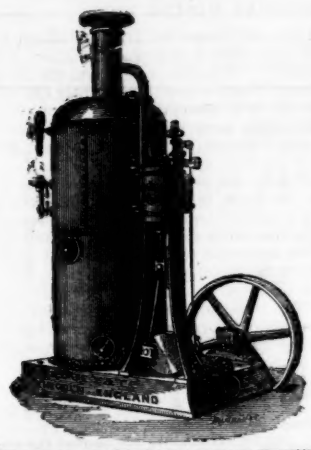

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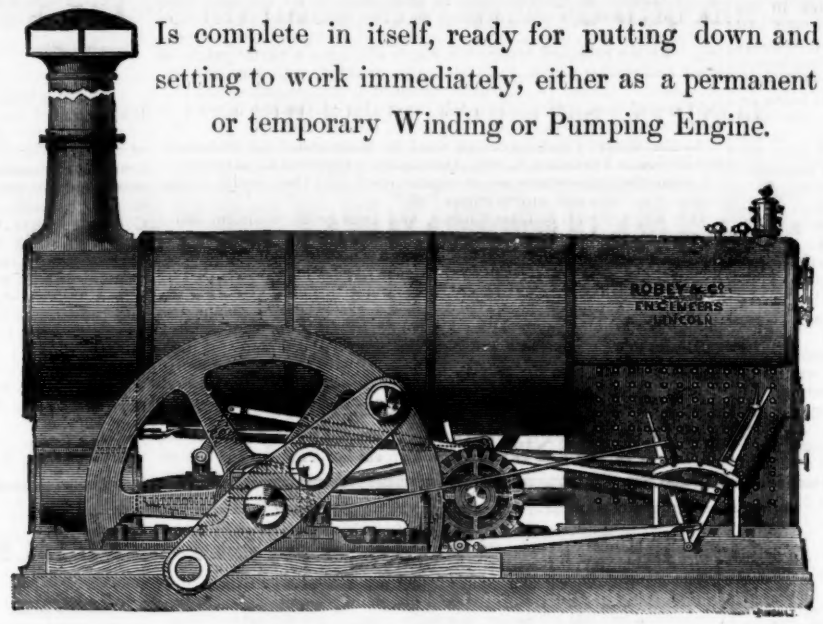

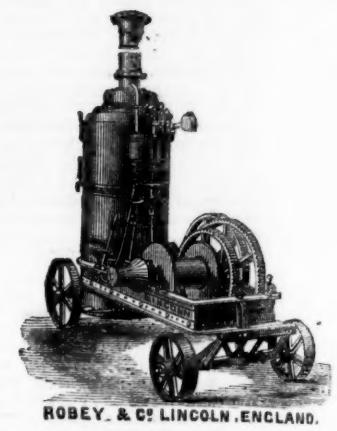

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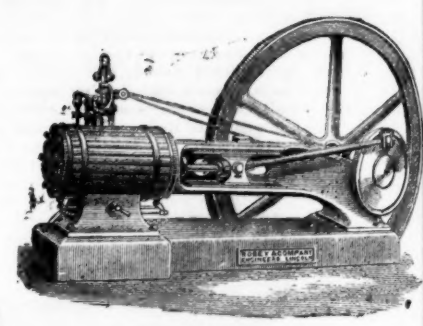

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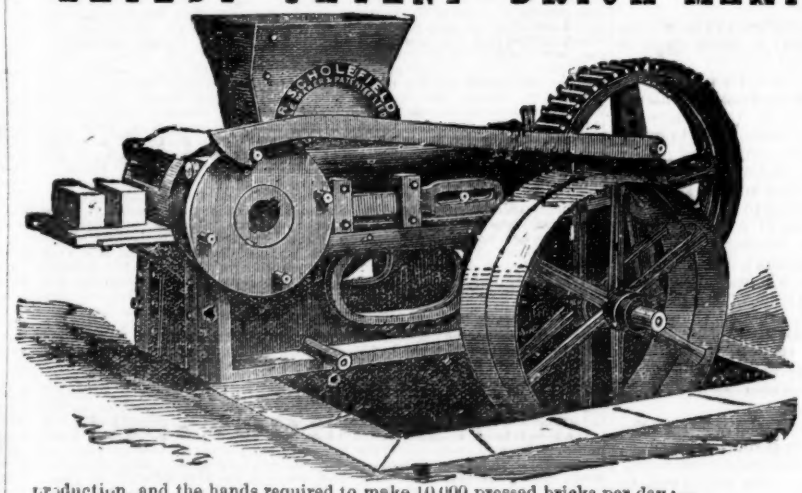

R. S. begs to call the attention of all Colliery Owners in particular to his PATENT SEMI-DRY BRICK MACHINE, and the economical method of making bricks by his patent machinery from the refuse that is taken from the pits during the process of coal-getting, which instead of storing at the pit's mouth (and making acres of valuable land useless) is at once made into bricks at a very small cost, by R. S.'s Patent Brick-making Machinery. If the material is got from the pit hill, the following is about the cost of production, and the hands required to make 10,000 pressed bricks per day:—

2 men digging, each 4s. per day	£0 8 0
1 man grinding, 4s. 6d. per day	0 4 6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0 2 0
1 boy greasing, 1s. 6d. per day	0 1 6
1 engine man, 5s. per day	0 5 0
1 man wheeling bricks from machine to kiln, 4s. per day	0 4 0
Total cost of making 10,000 pressed bricks	£1 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging.

As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick making Machinery.

THE MACHINES CAN BE SEEN IN OPERATION AT THE WORKS OF THE SOLE MAKER AND PATENTEE DAILY.

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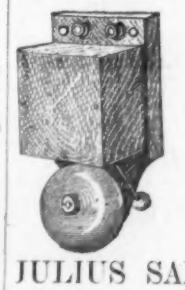

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Original Correspondence.

THE LEAD TRADE.

SIR,—Since our last the market has been a falling one, and sales are difficult to effect. The following are reported:—

410 tons rich Spanish	£15	7	6
100 " "	15	7	6
40 " ordinary	15	0	0

and lower prices must follow, as the quantity offering is much larger.

Newcastle-on-Tyne, Dec. 1. STOCKS.

BORING MACHINES IN CORNWALL.

SIR,—In the Journal of Nov. 27 Messrs. Hathorn and Co. stated—"The Darlington (drill) is not in use in any mine in Cornwall we believe except in Wheal Agar." Messrs. Hathorn and Co. may probably modify their belief when they learn that the Darlington drill is employed at Wheal Agar, Wheal Basset, North Penstruthal, and Marke Valley in Cornwall, and at Deven Great Consols in Devonshire.—*Dec.* 3. JOHN DARLINGTON.

THE DARLINGTON DRILL.

SIR,—With that inherent tendency to misrepresentation in the letter signed Hathorn and Co., of which I have more than once had to refute, I again ask you, in justice to parties interested, to insert the following:—Your reporter intended to say that the Darlington drill at work at Wheal Basset, the adjoining mine to West Basset, was doing excellent work. One drill only (four other drills being on the mine to go to work as soon as the necessary pipes, &c., are laid) drove 11 fms. 4 ft. 6 in. in the second month of working. In the interest of truth and mining I append every item of cost, save the compression of air, as supplied to the committee of Wheal Basset:—

260 lbs. of dynamite, at 2s. per lb.	£26	0	0
400 caps	0	10	0
34 coils of fuse	1	2	8
84 lbs. of candles, at 4s. 4d. per doz.	1	10	4
Smith's cost	2	0	0
Nine men's wages	39	0	0
Trammers, 7s. per fathom	4	1	3
11 fms. 4 ft. 6 in.	£74	4	3

Average 6*l.* 6s. 3d. per fathom; average by manual labour, and which the men refused, 8*l.* 10s. per fathom; showing a saving of over 25 per cent. on manual labour. In this statement there are no charges for mechanics repairing machines, as customary to the Eclipse, simply because none are required. There is no charge for the compression of air, the steam being taken from the boilers of the pumping-engine; but as steam is supplied at West Basset and East Pool, Wheal Basset is but a parallel case—save in this, the Darlington drill does its work as instanced above, and this is but one of many, at 25 per cent less than hand labour, instead of 25 per cent. more, as the Eclipse.

Messrs. Hathorn's ignorance of where, and how many, Darlington drills are at work may suit their purpose, but to their astonishment let me enlighten them. Darlington's drills are at work at Marke Valley, where one drill has done 14 fms. a month; at North Penstruthal, Wheal Agar, Wheal Basset, and Devon Consols. Many more would have been at work had Mr. Darlington's engagements permitted him to undertake contracts as the workers of the Eclipse have done, which is the cause of its being in Cornwall at all. Of the number of Darlington drills working at other places I do not profess to know—more than I can say a good many. Permit me, again, to assert after many years experience of the Darlington drill that we keep no mechanics at the top of the shaft—whose yearly wages amount to more than the cost of a machine, nay, more than two machines—to keep the drills in order. At Penstruthal or Basset not a sixpence has been expended on them since they started. No representative of this or that machine will induce me to adopt any other now before the public.

Permit me to add that it is not my intention to be led into a weekly refutation of false statements. If any of the workers of other machines can show better and more economical results than here given in the interest of mining let them do so.

Nov. 30. H. WADDINGTON.

P.S.—The speed attained at Wheal Basset during the current month (14 days) exceeds the former rate, and consequently at a lower rate of cost.

THE FUTURE OF COAL MINING OF YORKSHIRE, DERBYSHIRE, AND NOTTS.

SIR,—In resumation of my last week's contribution to the *Mining Journal* of all that affects the mining interest, in which space is indulgently conceded to my epitome of the coal industry (getting, transporting, and vending) of precited districts, permit me, as bearing upon the deplorable state to which the miners are reduced, to enlarge upon the heart rending recital of the evictions in the county of Durham, an event which cannot be regarded without feelings of deep concern, especially when we reflect that even children of tender years, in one case a mother with seven young children, one at the breast, were turned out on the roadside, enduring intense suffering with six inches snow on the ground and continuing to fall. Nothing more pitiful has occurred in Ireland. The house of a man who was absent with his wife was forcibly broken open (analogous with the latest French religion uprooting demoniacal novelty), and his furniture hurled into the highway. Another man, who with his father had worked 36 years at the colliery, took a sad leave of the locality. When the time shall come for the history of the nineteenth century to be written it will be no true record if it omits the almost incredible analogous position of the coal miners to their employers, the lessees. But hearken all right minded men, and learn the cause of such pitiless evictions, by no means brought about by any strike against the enforcement of a reduction of wages.

Sir R. A. Cross, who was appealed to in 1879 to arbitrate upon the claims of the employed in question, decided in favour of the men, which every colliery owner in the county of Durham accepted and carried out except the coal owner in question. The strike was, in fact, simply the result of his refusal to adopt the award of Sir R. A. Cross, the arbitrator. The conduct of the men under the greatest provocation was most exemplary, no disturbance having occurred, corroborating what I have stated in my previous correspondence as to the general edifying conduct of the pit population. Since the passing of the last amended Mines Bill of 1872, or from 1873 to 1879 inclusive, no less than 7896 persons have been killed in the mines of this country, averaging 1128 every year, altogether apart from tens of thousands of non-fatal accidents, a great number of which have resulted in men and boys being maimed for life. Taking the seven years named, one person out of every 457 lives engaged in mining operations has been killed. The average span or length of life of agricultural labourers in England is 43 years, whereas of miners only 27 years, or 16 years less than farm labourers. As a natural consequence more widows and orphans are found amongst the mining population than amongst any other class on the face of the earth. I stand with becoming modesty, but confidently, forward to entreat the energetic co-operation of all nobly constituted minds to rescue the vast coal mining population of this country from the abyss of thrawldom and misery in which they are engulphed, to the disgrace of any civilised country. The darkest blot upon modern civilisation is absence of simpathy in human nature, and stolid indifference, a characteristic of our time.

There is no class of toil approximating so closely to that which imagination would picture as fit alone for the slave, no work more arduous, no life more gloomy simultaneous with no labour so necessary, so that it will be conceded they are a body of men far too valuable to be heedlessly exposed to peril. The fact remains that month after month the same disastrous occurrences are heard of. Below the surface before the sun rises, stooping perpetually in narrow seams, striking hour after hour by the glimmer of a lamp upon coal and rock, inhaling noisome effluvia, sustaining often the annoyance of dripping water, and danger from falling coal, the pitman is hourly exposed to be launched into eternity. As an example, I know a pitman in the Barnsley district who leaves his abode during the three days he is employed at half past five in the morning, walks in 20 minutes to the pit, after descending gropes the best way he can for a mile and a half, and returns home at three in the afternoon. For these three days work he brings home for the sustenance of himself, wife, and young children 9s. a week, out of which he has to pay rent in the town of Barnsley, and cartage, and other household expenses. What I ask is the hourly anxiety of his wife for herself and children in the event of an accident maiming the bread winner for life, or losing his life? In what way is it possible to make provision for the hour of need by payments to friendly societies? I have it from an agent of the largest society in the kingdom that numerous pitmen are unable to to continue their weekly payments.

It makes me shudder to remember the loss of life in the Oaks Colliery, near Barnsley, to the extent of 340 men and boys; and only a day later 85 at Talk-o'-the-Hill, and 170 in the Ferndale Colliery. Numerous other illustrations may be given of a more distant and a more recent period, including the awful catastrophe of only the other day at Seaham. I am burning the output of the very pit in which so many lives were lost, the best coals, which cost me 23s. per ton, the cost to the coal merchant being actually 8s. 7½d. f.o.b.—5s. 6d. freight, 6d. harbour dues, 2s. street dues, 1s. 6d. cartage: total 18s. 1½d.—leaving a profit of about 5s. a ton, from which is to be deducted store rent, labour, office expenses and profit, and lastly screening. By my proposed system the miner will have a participation in these and similar profits, have his wages doubled, with constant employment. Under present most favourable circumstances the colliery-owner does not acquire a fair proportion of the rise in price in London, which naturally reacts upon the miners' wages.

At the Miners' Conference last week in Manchester the Secretary of the South Yorkshire Miners' Association is reported to have said—"I think the coal-owners are so unprincipled that they would refuse to grant an advance, unless compelled."

It is all very well to form Unions, and arrange for a sliding scale of wages, and so prevent disputes and strikes, but if the scale is based upon the price obtained in London the pitmen have a miserable prospect before them if the net proceeds to the coalowners do not improve, of which I regret to say there is not the most remote prospect. The above secretary, "*et homne hoc genus*," by no means disparagingly alluded to, must be got rid of by the miners, as perfect concord must be brought about between capital and labour. Think of a pitman earning 9s. a week to support a wife and young family, out of which he has to pay so much weekly to men who, as a first step, must be discarded. The pitmen are working for wages which any carman or coalheaver in the employ of a London coal merchant would refuse with scorn; and yet the pitman would be truely thankful if he could secure regular employment at the pay he is now getting, and take the chance of being killed or maimed for life into bargain. These "horny-handed sons of toil" literally carry their lives in their hands every time they descend a pit shaft.

I stated in my letter in the Journal of the 13th inst. that the intermediate business of the coal merchant must be annihilated, which is in strict conformity with the answer given by the representative of the Miners' Association, South Yorkshire, No. 7464, "It is a desirable thing to get rid of the coal merchant altogether."—(Select Committee on Coal.) The leading daily journal of the North of England stated this month, "The London coal merchant is getting 50 per cent. in excess of what the coalowner gets at the pit's mouth." Messrs. Macdonald, Burt, and *confrères* must give way to a new *régime*, to the immense benefit of both coalowner and miner.

Ramsgate, Nov. 30. W. J. THOMPSON.

CANADIAN MINING NOTES.

SIR,—The Canadian Pacific Railway, as I mentioned in my last letter, is attracting the attention of Canada at present, and not only of Canada but France, England, and America have taken a hand in it. Although nothing is known positively, and will not be till the House of Commons meet, yet the following may be taken as pretty correct:—

The arrangements with the Pacific Railway Syndicate having been concluded by the Government, the Dominion Parliament will meet on the first Thursday in December to ratify the bargain. The House will adjourn over the Chrismas holidays, and meet again early in January to finish the ordinary business of the session. A slight hitch occurred in the signing of the contract. Mr. Grenfell, of Morton, Ross and Co., London, also held a power of attorney from the house of Reinach and Co., of Paris and Frankford, and from the Société Generalé de Paris, but the instrument did not vest him with plenary power, and at the last moment he had to cable to his principals for further instructions. These are now on the way out, but Mr. Grenfell was instructed by cable to sign the contract and has done so. The arrangement is still a state secret, but the following particulars may be relied upon: One division of the syndicate is composed or Canadian capitalists, the chief among them being Mr. George Stephen, President of the Bank of Montreal; Mr. Angus, formerly manager of that institution and now general manager of St. Paul and Pacific Railway; Hon. Jas Cochrane, the well known Quebec cattle breeder, and Mr. McIntyr, formerly a dry goods merchant in Montreal, and now the controlling spirit of the Canada Central Railway, which will be the Montreal branch of the Canadian Pacific Railway. These gentlemen are the principal subscribers, but it is probable that they represent others whose names will not be disclosed until the company applies to Parliament for its charter. For instance, it is understood that Messrs. Stephen and Angus represent the interest of Mr. Donald A. Smith, formerly chief factor of the Hudson's Bay Company, and one of the wealthiest men in the Dominion. Two years ago Messrs. Smith and Stephens bought the St. Paul and Pacific Railway from the Dutch (Amsterdam) bondholders, and as it is the high road and gate-way to Manitoba, they have made enormous profits from the influx of emigrants and freight into that province.

The English division is limited to Morton Rose and Co., the agents of the Dominion Government in London. Sir John Rose, at one time Finance Minister of Canada, was a member of that firm for many years, but he withdrew from it some time ago, leaving his interest to his son. Mr. Greenfell is the senior partner of the firm. The American division is Morton, Bliss and Co., the New York branch of Morton, Rose and Co. The French division is composed of Reinach and Co., of Paris, and Frankfort, and the Société Generalé. The syndicate will have a paid-up capital of $50,000,000. Of this sum the Société Generalé subscribes one-half, 5,000,000*l.* sterling; the Canadian capitalists one-fourth, or $12,500,000, and Morton, Rose and Co., with Morton, Bliss and Co., and Reinach and Co., the remaining one-fourth. A guarantee of $1,000,000 will be deposited with the Government, to be forfeited should the syndicate fail in its contract. The Government hand over to the syndicate the sections of the road already completed or in course of construction, the value of which, including the surveys, &c., is put down at $30,000,000, and give them a cash subsidy of $25,000,000 and a land grant of 25,000,000 acres. The land is valued at $2 per acre, so that the gross subsidy with the completed actions represents the sum of $105,000,000.

The road is to be completed in ten years, from Lake Nipissing, its eastern terminus, to Buzzard Inlet, on the Pacific Coast; but there is a special proviso that the prairie section, roughly speaking, 1000 miles in length, from Manitoba to the Rocky Mountains, shall be finished, equipped, and running within three years. The syndicate will control the completed sections, run them, and be responsible for the running expenses until the completion of the road in 1891, when the Government will take possession. It is provided that the syndicate shall make no pooling traffic or other arrangements with American roads without the consent of the Government, subject to ratification by the Dominion Parliament. These are the main features of the scheme so far as the syndicate is concerned. Sir John Macdonald announced on his return from England that the road would be built from end to end without asking the Canadian people for a dollar, and this is how he proposes to do it. The Government will reserve 25,000,000 acres in blocks alternating with those granted to the syndicate, and this land will be thrown upon the market as the prairie section of the road is building. At $2 an acre—and it is believed the land will bring much more—this will give him $50,000,000, a sum sufficient to pay the cash subsidy to the syndicate, and to recoup the country for money already spent on the undertaking. It will be seen that the success of the whole scheme turns on the ability of the Government and syndicate to dispose of the lands to settlers. This year the emigration to Manitoba and the North-West falls nearly 50 per cent. below Sir John Macdonald's estimate of last session; but the members of the syndicate say they will establish agencies in every corner of Great Britain, and that Reinach and Co., will look after emigration from Germany.

The portions of the road completed, or in course of construction, which will be handed over to the syndicate, are as follows;—

Fort William to Selkirk (main line)	Miles 406
Selkirk to Pembia (branch)	85
Selkirk towards the Rockies (main line)	200
In British Columbia (main line)	127
Total	818

Prof. Macoun and other authorities estimate that there are at least 200,000,000 acres of good land in the North-West, so that after satisfying the land grant to the syndicate, and their own reserves, the Government will still have 150,000,000 acres to dispose of. It is proposed to sell enough of this to enable the Government to construct branch roads running north from the main line, and to improve the navigation of the Saskatchewan and other rivers. There is no doubt that the syndicate arrangement will be ratified by Parliament. The Government have a majority of nearly 90 in a House of 206 members, and, moreover, many members of the Opposition approve of the bargain, since it rids the country of an enormous burden.

Your readers will perceive from this what the Liberal-Conservative party of Canada is, and how under the leadership of a statesman like Sir John A. Macdonald the whole country since his advent to power has taken a great start, and the year 1880 at its close finds Canada 50 per cent. better in every way than when the Hon. Alex. McKenzie and his satellites were turned out of office in 1878. Our debt is decreasing, our credit is good, manufactures are springing up throughout the country, the new Welland Canal is nearly completed, and the Canadian Pacific Railway inaugurated on a business-like footing. It is more than probable that before the end of 1881 we shall have a surplus in the Treasury, and with the great North-West opening there is an outlook for prosperity second to no country in the world.

IRELAND.—We have watched affairs in Ireland with a great deal of interest, but they are more puzzling to Americans than "Alice in Wonderland." The fact of it is, we cannot understand why a landlord has not a right to lease his land to whomsover will rent it, and get the highest price he is offered. If those Irish tenants that are making such a row came to America they can get land in our North-West for nothing, and own it themselves. If after 10 or 20 years this same "tenant" wishes to rent his farm, he would think it very hard if he were not allowed to do so. It is just "here;" it makes a great deal of difference whose ox is gored. It would not cost the English Government as much to ship off all the surplus population from Ireland and put them in the North-West as to continue this agitation. Then the Irish tenant would get 160 acres of land in his own right, and if he were industrious would soon want to hire men instead of working himself.—*Brockville, Nov.* 11. BOURNONITE.

P.S.—There is some news from Newfoundland of the discovery of rich veins of quartz there, but I shall have to reserve it for my next letter.

ANGLO AMERICAN MINING.

SIR,—In a letter headed "Then and Now—No. III.," published in the Journal of Oct. 30, Mr. W. B. Cobb takes a narrow and insular view of the vast field of mining industry. Whether it has been the fault of the mines or of the management English capital evidently has not found home mining remunerative as a general thing. Capitalists would only be too glad to place their money in home mining had experience shown it to be the grand source of prosperity which Mr. Cobb represents it is.

If Mr. Cobb knew more about America and its mineral wealth he would hardly write as he does. Is there in Cornwall or in Wales a mineral district to reach which a railroad company would undertake such a gigantic enterprise as the San Juan extension of the Denver and Rio Grande Railroad? This extension will be about 200 miles long, and relies for its business on the development of the San Juan mining country, a part of South-Western Colorado, of which the San Miguel Gold Placer Mines, the Rio Dolores mining district, and the Rico gold and silver mines form the western fringe. Many of your readers will find the following description of Colorado enterprise and Colorado scenery interesting to them. It is an extract from the Chicago Tribune of Nov. 12:—

One of the most delightful excursions it was ever my fortune to enjoy was one given a short time ago by the passenger department of the Denver and Rio Grande Railroad to the Press of Colorado—the object being to celebrate the extension of one line of their extensive railroad system into the heart of the San Juan mountain region, and through the Press to make known to the country the importance and beauties of this new line. The train was special, consisting of a fine engine, one baggage, one chair, and one Pullman sleeping car. The baggage car was devoted to the commissariat, which was abundantly supplied from the Glen Arm Hotel of Denver, with waiters from the same hostelry to supply the physical demands of the hungry excursionists. And you know newspapermen are proverbially a hungry set. Yet there was "corn in Egypt" for all, and the only complaint I heard was a lack of "wet groceries" on the part of a few thirsty scribes. The party consisted of Mr. F. C. Nims, the General Passenger Agent of the Railroad, who acted as "guide, philosopher, and friend" to the party, accompanied and well supported by his estimable wife; Mr. S. F. Pierson, the Railroad Pool Commissioner at Denver, and wife; and representatives of most of the leading papers of Denver, Leadville, Pueblo, &c., many having their wives with them; together with correspondents of the London Telegraph, Lippincott's Magazine, New York World, and the writer from the Tribune and his wife. Our course over the San Juan line was westward, close to the border lines of New Mexico and Colorado, and was more frequently in the former territory than in Colorado. For a few miles the road was comparatively level until we entered the foot-hills of the San Juan Mountains; and then we learned what contortions, what twistings and gyrations, a narrow-gauge railroad was capable of. We followed at times every point of the compass, yet were constantly climbing higher and higher. At one point the road described a perfect S, the three horizontals and the curves being constantly in view at the same time, like an enormous letter laid up against the side of the hill. Yet, with all our twisting, we kept making a westerly advance, until at last we came to a point where, looking far down at our left, we saw the Los Pinos river, skimmering a thousand feet below, like a stream of burnished silver; and across it the slopes of the opposite mountain, with groves of dark pines and spruces, interspersed with bunches of aspen, whose yellow leaves, touched by the frost, shone like amber in the sunlight. Thence we followed generally the course of the river, though always at an elevation of at least 1000 ft. above it, by a track cut of the mountain side, spanning bridges over narrow chasms, driving through tunnels or open cuts, and several times winding for miles around the heads of deep gulches which crossed our way; and, after a time, would find ourselves looking across at the track only a few hundred yards away, but to reach which had cost us several miles of travel. The mountain slopes here are not generally so abrupt or barren as those of Central and Northern Colorado, and are well covered with low pines and pinions, and a luxurious growth of bunch grass, which must make capital pasturage for cattle. Down the further slope of the mountain we see across a dark deep valley, around which we must make a long detour, that the river is lost in a mighty chasm, between whose lofty walls rests a dark shadow. Far up on the face of the cliff to the right we see a tunnel opening and the railroad track leading up to it; and we trust we shall reach it before night closes down. Our wish is gratified. We reach and pass the tunnel, and the train halts on the very edge of the awful chasm. We soon learn, too, that the halt is for the night; and here, in the midst of such wildness and grandeur as we scarcely dreamed of, we make a picnic camp, with most unusual accessories. Instead of wrapping in blankets and laying down under a canopy of stars we sleep in luxurious Pullman beds. Our supper is served on mahogany tables, by Glen Arm waiters, with all the picnic luxuries. After tea boxes of fragrant Havanas are handed around. The ladies and some of the gentlemen retire to the chair car, to lounge and smoke, or talk politics, while others indulge in whist or tempt fortune in draw-poker. Some kindle a great fire from fallen timber on the rocks at the right of us; and ere its embers have ceased to flicker in the clear starlight we retire and court sweet sleep to the music of the torrent roaring 1500 ft. below us. We all arose early in this sweet crispy morning air, and won an appetite by climbing up and down the rocks, and seeing in the clear light the wondrous views which we only caught dimly in the gathering darkness of the night before. It was a sublime scene, and grand beyond the art of word or pencil to portray.

After breakfast a few of us (both ladies and gentlemen) climbed a high point of rocks standing almost vertically over the canyon, and from the tracks a photo was taken of us grouped, with the lofty ragged walls opposite for a background. The train then backed through the tunnel, and here the scene was simply marvelous. On one side were these giant cliffs, towering almost vertically 2100 ft. above the water. On the left for miles we looked down the valley of the Los Pinos river, with its crystal waters leaping, and glancing, and dancing in the sunlight, as if rejoicing to escape unscathed from its contest with the fearful gorge. On either side of the stream were green grass-covered bottoms, from whose edges climbed long slopes, covered with pine and yellow aspen, while rugged cliffs and great rocky minarets looked out at intervals between; and far up the side could be traced for miles the railroad track, winding like a serpent's trail around the mountain side. We all stood silently and *awe*fully, looking upon this scene of combined beauty and sublimity, when an irreverent scribe, whose thoughts wandered ruefully forward to the story of the trip he must write up by-and bye, said, with discouraged accents—"Who will ever be able to describe a scene like this?"

This San Juan line of the Denver and Rio Grande Railroad must prove a most popular excursion trip for tourists during the next season, and I would recommend those who contemplate visiting the Switzerland of America to make a place surely for this upon their programme. I have seen much grand and beautiful scenery in different lands, but my memory recalls no counterpart of a tour like this. But railroads are not built especially for tourists, nor did the Denver and Rio Grande select this route for its scenic excellence; but it seemed the most feasible route to reach the rich and mountain-guarded mining districts of San Juan. It has long been known that these mountains are knitted and veined with the richest fissure veins of precious metals; but they were so difficult of access as to make transportation of machinery for mining, and reduction, and handling of ores almost impossible. The company expect to cross the summit before the present year closes, and to reach their new town, Durango, early in the coming year. This site was selected on account of its convenience to coal mines, its plentiful supply of water, and general convenience to mining centres. When it is completed there will be cheaper transportation to the camps of Silverton, Animas, Animas Forks, Rico, and many other mining camps. A new impetus will be given to mining operations, and the immigration will be heavy. Indeed, it will prove the most important factor in the development of that portion of the State, and will prove to be a permanently profitable line. It will, besides, be the nearest and most desirable route to the wonderful Pagosa Springs, which, with facility of access, will unquestionably be a great pleasure as well as sanitary resort. Success to this young giant of narrow-gauge railroads; and when it gives another such excursion as the last may my name not be forgotten in its invitation list.

I am well aware that English investors have lost a good deal of money in American and other mines. So have investors lost much money in American mining companies. Excessive capitalisation, mines stocked for millions of dollars or hundreds of thousands of pounds, lavish current expenditure, incompetent or dishonest management have caused this immense loss of money to English and American investors. At the present time a different order of things is coming into vogue in Colorado. Money is being made by mining in the earth, instead of mining in the pockets of the public. Let English investors try this new state of affairs. Let them try placing their money in the richest mineral district of the world—a little in advance of the iron horse. The Rico Silver Mining Company, whose

advertisement appears in the leader page of the Journal, offers them the opportunity. Mr. Cobb advocates certain home mining investments. I venture to say that 100*l.* invested in the Rico Silver Mining Company will yield a larger annual income than will 500*l.* invested in any mine he mentions.—*Chicago, Nov.* 15. J. J. West.

FLAGSTAFF MINING COMPANY.

Sir,—In relation to the note which appeared in the market report of last week's *Mining Journal* concerning the "Flagstaff New Company about to be brought out with power to acquire other adjoining interests not included in the title of the American Mining Company, especially the claims of Mr. Bamberger, which that gentleman, it is said, agreed to release the new company to be brought out, and to take payment in shares for the same" and our correspondence upon the subject, I have written to Mr. Vincent, to whom you recommended me to write to as your authority for the statement, but have not received any reply. I think it right to take occasion of your next issue to say that the statement is entirely without foundation, and to place your readers in possession of the following facts as to my position in the matter:—

I am one of the owners, and represent my co-owners to the extent of ⅛ undivided interests in the South Star and Titus Mine, which has been the cause of so much litigation, and which is under appeal to the Supreme Court of the United States, and a final decision is not likely to be given for some 12 months to come. I have lately purchased the Nabob Oriental and Ore Cash Mines, which are now being worked in peaceable possession, an injunction having been granted and damages awarded to the Nabob in the District Court of Utah against the Virginia. I also represent the Fleetwood Mine, which has an action pending against the Virginia for trespass, and which action is likely to be heard during this month.

I would further state that Mr. G. Cullins has a judgment for about 600*l.*, which is a lien upon the 100 ft. of Flagstaff; this is also under appeal to the Supreme Court at Washington.

My attention has also been drawn to a circular of Mr. Vincent's, dated Nov. 29, in which he states that he has "closed a contract with the American Mining Company for the purchase of their quit claim deed to the Flagstaff, Virginia, South Star, and Titus Mines." It is important for the public to understand that a quit claim deed contains no warrantry of title, or even the right of possession, but merely transfers the vendor's interest, and if he has none so much the worse for the purchaser.

I must again deny having offered to Mr. Vincent, or anyone else, the various properties I own and represent, much less of having ever agreed to take shares in payment, especially in a company with so large a capital as 150,000*l.*

Those about to take shares in a company formed to work mines in America should see that the mine is not only valuable, but that the title is secured by U.S. patent upon the run of the lode.

For the information of the Flagstaff share and debenture holders I have prepared a map of Little Cottonwood district, showing the position of the various claims on Flagstaff Hill, and I will forward a copy gratis with pleasure to any share and debenture holder who may apply to me for the same. S. Bamberger.

Moorgate-street Chambers, Dec. 2.

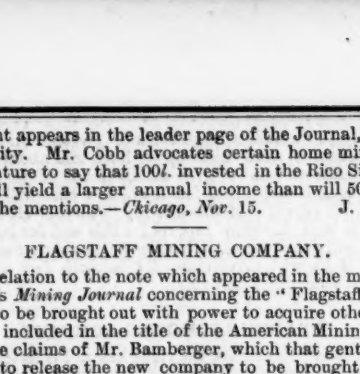
SLIDES AND HEAVES.

Sir,—In reply to "Gold not Gilt's" problem on this subject, judging from the experience I have had with large numbers of faults, I think it is one which miners call a "right hand heave," and the direction to drive from the point of contact, *d*, would according to plan be north-west on lode *b*, to find western section of lode *a*. It is one of those cases which require the practical eye of a careful observer to determine it, however, satisfactorily. There must be a cause for that peculiar bend at *c*. I have met with one very similar fault, and only one, out of hundreds of almost every variety, and in that case we followed the well-known rule, and soon found the lode in the direction intimated. The exceptions to such rule are very few in Cornwall.—*Nov.* 30. B

HEAVES OR THROWS.

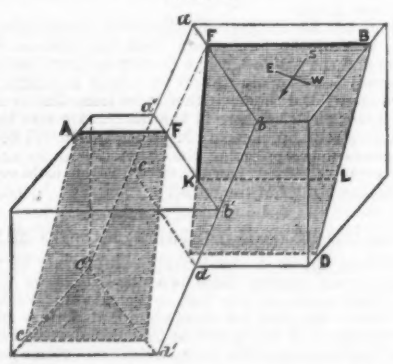
Sir,—The following general explanation of the case cited by "Gold not Gilt" will, perhaps, enable him not only to seek in the proper direction for the lost lode, but also to understand the reason for seeking in this direction in preference to any other. Referring to Fig. 1,* A, B, C, D represents the plane of the lode before the throw

Fig. 1.



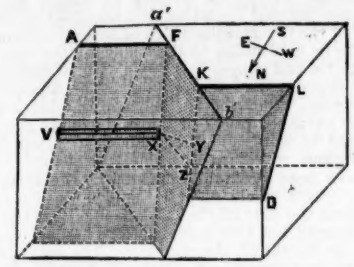
took place; also *a*, *b*, *d*, *c* represents the plane of the second lode or fault, which has heaved the first A, B, D, C. Experience has shown that in more than 99 cases out of every 100 the portion of ground on the hanging side of the fault has lowered, and that, too, on the full line of the dip of the fault. Take the point F, where the lode and faults intersect at the surface, and imagine that the portion of ground on the hanging side of the fault has lowered on the full line of the dip of the fault. Then the portion of the lode at the surface on hanging side of the fault, close to the intersection of the fault and the lode, will move down the plane of the fault in the steepest direction F F′, see Fig. 2, which is on the full dip line of the fault;

Fig. 2.



and A F′ will be the outcrop of the lode on the hanging side of the fault, and F B, lying much higher, the outcrop of the lode on the lying side of the fault; and K L will represent a line in the lode on the lying side of the fault in the same level as the outcrop A F.′ Imagine now that the surface of the ground on the lying side of the fault has been lowered by denudation till the surface of the ground on the lying side of the fault is on a level with the surface of the ground on the hanging side, then A F′ will represent the outcrop of the lode on one side of the fault, and K L on the other, which latter, in Fig. 3, is shown to be to the right hand of A F′ when advancing from A towards the fault. Suppose V X, Fig. 3, to be the level driven

Fig. 3.



by "Gold not Gilt" up to the fault at X, then the lode on the other side of the fault will lie to his right hand, and he will find it by driving a horizontal drift, X Z, in the fault to the right from X. He will meet with the lode sooner by driving an inclined rise drift, X Y, from X, at such an inclination that the line X Y is perpendicular to the two lines of intersection of the fault and lode F′ X and K Y Z.

If "Gold not Gilt" will forward the exact dip and bearings, by the compass, of the two lodes, as given by the mean of several observations taken carefully in different levels, I will send the bearings for the exploratory drift from X to Y, and the rise at which the drift X Y should be driven. If he can also tell the amount of the throw, measured either vertically or on the full line of the dip, I shall then be able to tell him approximately the length of the horizontal and inclined drifts X Z, X Y, from X to their meeting with the lode, and he will then be able to calculate approximately the cost of the exploratory drift. The question put forward by "Gold not Gilt" is simply a question of solid geometry (spherical trigonometry), and all such questions would have been treated of in the Lecture Notes, but that owing to the great number of sketches necessary they had to be omitted. There is no work in English which treats the question of faults with anything like the detail required by practical men, and the only satisfactory treatment known to the writer is that by Von Carnell, in Karsten's Archives, vol. ix. A knowledge of spherical trigonometry is necessary to be able to solve, numerically, questions such as that asked by "Gold not Gilt."

Headingley, Leeds. J. Clark Jefferson, A.R.S.M.

* The figures are isometrical sketches of the case cited by "Gold not Gilt," taken from the N.W. looking S.E.

TIN MINING IN ST. BLAZEY DISTRICT, CORNWALL.

Sir,—With your permission I will now continue the notices of some of the mining setts on the estates of Sir Colman Rashleigh, Bart., which was commenced in the letter inserted in the Journal of Nov. 20. Finding, however, that another correspondent referred to the first on the list—on the Rashleigh Tin and Copper Mine, in your last edition, and judging from an advertisement which also appeared therein, that it can be better described by other pens than the writer's, I will only remark that it is most certainly deserving of much more vigorous prosecution than it has hitherto received, and leave it to such pens to point out the exact spot and depth where they anticipate meeting with the unusually large and productive lode recently discovered on the New Eliza sett, observing, however, that there is no question, so far as I can judge, of that lode being found, and probably near the surface, on their grant also.

Referring next to the second mine mentioned in my first letter—the South Prideaux Wood—I need not trouble your readers to follow me at any great length herein, as I am informed that a company will soon be brought out to work this sett. Still I may perhaps be permitted to allude to one or two points without being accused of interference with any statements that may hereafter be published by such company. The first is that as the great south lode in New Eliza underlies north, and this sett is east-north-east of the Rashleigh Tin and Copper Mine, it may fairly be expected to be found here also.

The second is to direct attention to the extensive workings by the ancients, which may be seen in the backs of several large and evidently productive lodes; that these are large the excavations made clearly demonstrate, and that they must have been very productive; also the absence of those immense mounds of refuse or burrows, which are usually found on the surface of old mines, no less clearly proves else what has become of these burrows.

I may also add for the guidance of your readers that I have read a letter written in 1874 by one of the then shareholders in this mine, in which the writer says—"The ground in sight already opened up for breaking and carrying to the stamps is sufficient to last for the next 50 years." Now, Sir, if this be so what more can be required beyond capital and its judicious outlay to make this, and very speedily too, a dividend-paying mine. No doubt further information upon these important points will soon be forthcoming, meanwhile I would repeat the advice offered to your readers in my first letter—go, examine, and judge for yourselves, and if satisfied wait awhile before parting with your unemployed capital in the now much-vaunted Indian gold mines. Fish, Tin, and Copper.

London, Nov. 29.

TIN MINING IN ST. BLAZEY—IMPORTANT DISCOVERY.

Sir,—I read in your valuable Journal of Nov. 20 some remarks made by a visiting correspondent, signing himself "Fish, Tin, and Copper," in reference to mining in this district, and he has spoken in very high terms of Sir Colman Rashleigh, Bart., as a friend to the miners. Being his mineral agent, I cannot allow this to pass without stating that such is the fact. I can also vouch for the accuracy of what he (the correspondent) has written as to Curvear Moor and New Eliza Mine, whose boundary is near the rich and celebrated Wheal Eliza, and have the latter's, or parallel, lodes. This sett is very extensive in size, and some of the lodes of the once rich Par Consols Mine—which, before making a call on the shareholders (the working costs being borne by the purser, the late Mr. Treffry, then known by some of your older readers as Mr. Anstin), cut a good lode of tin and copper ore in an adit level at a very shallow depth—are running through the New Eliza, and if a wealthy purser is at New Eliza he can, to all appearances, do likewise. This sett is granted to Mr. R. Mack, of London, who is one of the fortunate proprietors of this important property.

No greater discovery has ever been made in this county at so shallow a depth. The lode is visible at surface. A shallow adit level is driven in the hill 3 or 4 fms. perpendicularly, and holed to surface. The miners are quarrying the lode away, and are in it 12 ft., and it may be a great many feet more to get to the south wall. Almost every part of the lode is good tinny paying work, and a pare of men can raise enough tinstuff daily to keep 24 stamps heads at work, and which ought to be erected at once. There is ample water to work two water-wheels 30 ft. diameter and 3 ft. breast, and for dressing purposes. Your correspondent gave the result of samples coming from rocks weighing between 2 cwt. and 5 cwt., and which have recently been assayed in London of 45 lbs. to 56 lbs. of pure tin to the ton of tinstone, and one I had made by Mr. S. Northey, of Wheal Eliza, on the 11th inst., gave 2 cwt. 1 qr. 14 lbs. of black tin to the ton of stuff. The miners blasted another hole in the lode, and moved out a rock weighing about 3 tons, a portion of which was assayed by Mr. Northey, who gave as the result 4 cwt. 3 qrs. 19 lbs. to the ton of stuff, and the greater part of the rock is equal to that assayed. This evidently is proving the lode to be more valuable as progress is made towards the south and in depth. On the heap of work are rocks of tinstone weighing 5 cwt. or 6 cwt., nearly solid tin, glistening in the sun. The lode is not a mere squat, or bunch, but is a hard solid master champion lode composed of tin and tin capel.

The lode is cut a great many fathoms east in two costean pits in which the broil of the lode is 20 ft. wide, yielding tin in good paying work. This lode in its easterly bearing will pass through the Rashleigh Tin and Copper Mines, the South Prideaux Wood Tin Mine, and will also touch at East Eliza Mine. The whole of these setts have recently been granted by Sir Colman Rashleigh, Bart., at 1-24th dues, and I see no reason why these mines may not equal in value the New Eliza. The discovery was not made in the latter when the other setts were granted. The north lodes can also be seen at surface, and are very numerous, varying in size from 1 ft. to 4 ft. in width. Every lode will yield tin. Your correspondent also gave the result of an assay of a sample taken from one of the lodes, 3 ft. wide, by Prof. White, of Change-alley, Cornhill, at the rate of over 8 cwts. of pure tin per ton of 2240 lbs. In the south part of this property is an iron lode, an adit level on the course of which has been driven 100 fms. Nearly all the back of the level is taken away to surface. The miners who worked there inform me that in the bottom of the level a lode has gone down 3 ft. or 4 ft. wide, nearly all iron.

Doubtless some of your numerous readers will say it is too good to be true, but it is visible at surface and can be tested. I am not aware it is for sale, neither does it want puffing; it will speak for itself. We have no occasion to send to Australia or any foreign clime for tin, as we have an abundance in this district and in the county. All we want is capital, perseverance, and economy, and by having these we shall be wanting back a great number of our best men who are banished for want of work. A great number of new mine setts are granted here, and which, it is expected, will commence working in the early part of the coming year. If tin and copper further advance St. Blazey will again see some of its bright and glorious days. P. Rich,

Mineral Agent to Sir Colman Rashleigh, Bart., Sir Charles B. Graves Sawle, Bart, Mr. Nicholas Kendall, and other gentlemen.

St. Blazey, Nov. 27.

WEST GODOLPHIN MINE.

Sir,—As I am responsible to my friends by asking them to subscribe for the reworking of this mine I shall be glad if Mr. Robert Wilson, chairman of the late company, will publish full particulars of the real position of the property at the time of its abandonment. I have personally communicated this desire to Mr. Wilson, so that in all probability his statement will appear at the same time with this. I had nothing whatever to conceal when asking for subscriptions for the resuscitation of this mine, therefore should any subscriber wish to withdraw after reading Mr. Wilson's statement I am prepared to return him his amount in full. I may add contracts have been entered into for the purchase and erection of engines, &c., deliveries of which will shortly commence, and every preparation is being made for the speedy development of the mine. F. G. Lane.

51, *Threadneedle-street, Dec.* 1.

WEST GODOLPHIN MINE

Sir,—My attention has been called to a letter in last week's Journal having reference to the remarks made by me at a meeting of the shareholders in the above mine, held on Saturday the 13th inst., as reported in the Journal of the 20th, and from an interview I have had with the late secretary I learn that objection is taken to some observations I made as being likely to mislead. These were based, as I then most distinctly stated, upon the last printed and published statement of accounts of the old company, submitted to their shareholders at a general meeting held on Nov. 5, 1878, and upon the published report of their mining agent, Capt. John Pope, dated Nov. 2 in the same year [which I beg to send you herewith]. These accounts and report covered the five months—May to September, 1878—and it will be seen clearly by any candid reader of your report that all the observations I made and all the inferences I drew were made upon or deduced from their own operations during these five months alone, as recorded by themselves. Bearing this in mind I do not see how their accuracy can be impugned. I have again gone over the figures and report and fail to come to any other conclusions in my own mind than those which I merely gave to the meeting as the ones which had influenced me in determining to join the body of gentlemen who had already taken the whole capital and paid upon every share to give the mine a vigorous trial.

I am now informed that operations were carried on after the period to which I have refeferred—during the three remaining months of the year 1878, and January, 1879—and the results have been kindly communicated to me by Mr. Charles Thomas. Had these results been in my possession or within my knowledge when I was suddenly called to the chair at the meeting they would have been as readily laid before the shareholders as were those of the previous five months, of which I was in possession, which upon the published statement showed an average loss of 118*l.* a month, with their tin selling for a little over 30*l.* a ton. This loss I now find was increased during the three or four months of their further operations to an average of 382*l.*—a fact which of course with tin at the then unprecedentedly low price had very much to do with their resolve to close. I stated at the meeting that the only wonder was their losses had not been greater during the period I was reviewing, and I confess I am not at all surprised at finding them increased during the subsequent period.

I am informed also that, although Captain Pope says under date Nov. 2, 1878, they had driven upon the lode in the 80 where it had been cut through only 3 ft., subsequently it was driven between 15 and 20 fms.; and, further, that the stopes had fallen off considerably in the last two or three months. Doubtless they must have done so, or it would be impossible to account for their sale of tin having fallen from 560*l.* a month during May and September to 253*l.* a-month during October to January. This, however, is nothing very surprising. Such fluctuations are observable in almost all tin mines, especially those where operations are carried on in only one or two levels, and where the stopes are necessarily few; and they very often recover themselves as quickly as they occur. In this case, had the 80 been extended as far as the 70 and the 60 above, and stopes been opened in the run of tin ground under those above, is there any reason for supposing their position would not speedily have improved? I can see none. Again, had the price of tin been during the whole time referred to what it is now, when we are going to develope this property, is there any reason for supposing the old shareholders would have given us the opportunity of doing so by abandoning the mine? None whatever. During the five months I commented upon they sold 76 tons of tin. Had this fetched 60*l.* per ton—a price which at the present standard is not very far from the mark, it would have amounted to the sum of 4560*l.* The copper ore sold was 358*l.*, making 4918*l.* Their total costs were 3440*l.*, showing a profit of 1478*l.* I stated at the meeting this profit at about 1200*l.*; but now, with the additional light and information which has been kindly given to me, let us see what would have been the result of the whole nine months' working had they received the present current price for their tinstuff. I should here say I have not the exact number of tons sold during the months of October to January, but Mr. Thomas has given me the sum realised as amounting to 1014*l.*, including a small sum for copper, and looking to the price at the time I assume this to represent 30 tons. This added to the 76 tons sold during the previous five months makes 106 tons in all, which at present price—say 60*l.*—would give a total sum of 6360*l.* Their costs were during the five months—May to September—of 1878, 3440*l.*; and four months—October to January—2475*l.*: total, 5815*l.*; leaving a profit of 545*l.*; with the limited output of an average of only 11 or 12 tons of tin per month, and including all the extraordinary and very heavy expenses and claims which are invariably met with and have to be paid by the adventurers of any abandoned mine during the last stages of its operations. It should be borne in mind, too—if we are correctly informed—that nearly 1200*l.* has been received for tin sold by parties who have worked over the leavings since the mine closed, which, if added to the sum realised by the adventurers in the nine months, would very considerably increase this profit.

Taking my statements, already reported, as referring to the five months, and to them only, I cannot see that I have anything to withdraw, but if anyone should choose to take them as referring to any other or further period, or to any other or subsequent figures or statements, which were never, as I believe, before published, and were therefore unavailable to me, then they should be modified to the extent shown in this letter, or rather should be read side by side with it. My earnest desire has been to get at the exact truth with regard to the property in question. I can have no possible motive for colouring anything, or exaggerating any single point in connection

with it; and my anxiety that no one should by possibility be in the slightest degree misled by any observations or deductions of mine being quite as great as can be that of the writer of the letter referred to or of anyone else. May I request that you will be so good as to give me space for the insertion of this communication in your next issue.—*London, Nov.* 29. ——— R. W. GOOLD.

WEST GODOLPHIN MINE.

SIR,—It is a pity that Mr. R. Wilson, instead of threatening the promoters of this company with his wrathful denunciations, did not state which of the representations made by the promoters were unfounded, and likely to delude the investing public. I hold 500 shares, and having carefully enquired into the previous history of the property I find it was abandoned early in 1879, in consequence of the low price of tin and the inability of some of the larger shareholders to pay further calls. I have now before me a statement of West Godolphin Mine accounts for May, June, July, August, and September, 1878, from which it appears the working cost, royalties, and other charges were for five months 3431*l.* The amount of tin sold (76 tons 12 cwts. 1 qr. 13 lbs.) realised, at an average of about 32*l.* per ton, 2471*l.*; 38 tons of copper ore realised 366*l.*; sundry credits, 16*l.*: total receipts, 2853*l.* Total loss on five months' working, 578*l.* In addition to the ores sold, the manager stated there were on the mine 150*l.* worth of copper ore and precipitate ready for market, 50*l.* worth of copper undressed, and 4 tons of tin in the stone, the net aggregate value of which could not altogether be less than 250*l.*; which amount, deducted from the loss of 578*l.*, reduced the actual loss to only 328*l.*, and yet this mine was abandoned, and the machinery pulled up and sold within three or four months after the meeting was held at which the above statement of accounts was presented; and the parties who, regardless of their own interests, so foolishly acted are now, dog-in-the-manger like, seeking to deter the present proprietary from developing this property by leading the public to believe its promoters are circulating inaccurate statements relating to its past history. Why, if the mine was at work and in the same position now as in November, 1878, the 76¼ tons of tin could have been sold at 57*l.* per ton, which would have left a net profit of 1334*l.* on the five months' working.

In the captain's report, dated November, 1878, he concludes by stating—"For the next few months we shall in all probability have plenty of water for stamping, so I am hoping to be able to return a larger quantity of tin." Yet, in the face of all this the mine was stopped early in the 1879; the machinery was all sold at ruinously low prices, and worse still, the tin leavings (refuse tin) on the surface were sold for 110*l.*, and these leavings, I am credibly informed, have since realised to the lucky purchasers upwards of 1200*l.* Now, in the face of these facts—for facts I believe them to be—I do not fear Mr. R. Wilson's revelations—the sooner he makes them the better if they are of any importance—but I think they will only establish the fact that he has only either his own precipitancy or his own want of judgment to blame for the abandoning of a property paying its way, or nearly, during the severest depression in metals known for half a century past without making an effort to procure solvent shareholders to assist him in carrying the concern to a successful result. I may add I have never bought or sold a share in the mine, having taken my shares on the formation of the company, and although the shares are at a good premium, I am so confident of the mine proving a success that I shall hold until the concern is fairly at work, and returning tin as it did before its stoppage, when the results cannot fail to be most satisfactory to all interested in it. INVESTIGATOR.

Dec. 3.

WEST GODOLPHIN MINE.

SIR,—In accordance with the communication which I forwarded to you last week I have now to request that you will cause this letter to appear in next week's Journal. I should, perhaps, preface the remarks that I am about to make in contradiction to the statements of Mr. R. W. Goold, as published in the *Mining Journal* of Nov. 20, by saying that I have no intention to depreciate the actual value of the property, and that I take no further interest in the subject than that stated in my former communication. I was chairman and the largest shareholder in the former company, and having taken an active part in the general management I am in a position to speak with authority as to its affairs. In justice to the promoter I should, perhaps, add that I was offered shares in the new company, but that I declined to accept them for reasons which I expressed at the time. Had I had sufficient confidence in the success of the mine I would probably have purchased it as it stood with its engines, stamps, plant, and materials, when it was submitted for sale by public auction as a going concern, and failed to realise the reserve which was placed upon it—2000*l.*

In addresing the meeting, held on the 13th ult., Mr. Goold, the chairman, said—"With regard to the value of the property underground, it is almost impossible to get any direct evidence. I have depended mainly upon the evidence of Capt. Thomas Hodge. . . . When he first surveyed the mine under all kinds of difficulty he gave his opinion about it." . . . Any and every information respecting the underground workings might have been obtained by Mr. Goold had he applied to me or to the office of the company, and the reports from the mine might have been found in the back numbers of the *Mining Journal*. It was an invariable rule of the company that the mines should at all times be open to inspection, and every facility and assistance were given to inspectors. I am, however, not aware that Capt. Hodge ever inspected the mine, and to the best of my knowledge and belief he was never underground during the whole of the time of the company's existence. Mr. Goold states that "Capt. Josiah Thomas was called in to inspect the mine a year or so before it stopped." As a matter of fact Capt. Josiah Thomas's inspection of the mine was made in June, 1874, about four years and a half before the mine was stopped. In alluding to the former workings and workers of the mine Mr. Goold says—"Although in the 70 they were getting tin at the rate of about 15 tons per month, with a good deal of regularity, they never took the trouble when they had cut through the lode in the 80 to drive east and west on it more than a few feet." In no one month did we obtain 15 tons of tin from the 70, and I believe I am fully justified in stating that from no one level did we ever obtain 15 tons per month either with regularity or on any one occasion. The 80 was driven both east and west, in all about 108 ft.; in addition to which, in order to prove the lode, and for ventilation, a winze was sunk through from the 70 to the 80.

In referring to the financial position of the late company Mr Goold says "I have informed myself on the history of the old undertaking the last few months of its existence. Here is the statement." He then proceeds to explain and comment upon an account for the five months from May to September, 1878, which resulted in a loss to the company of 589*l.*, according to the figures quoted, or in round numbers an average loss of about 118*l.* per month, but as a matter of fact this account does not represent the history of the undertaking during the last few months of its existence, and I am at a loss to account for Mr. Goold so considering it; the circular in which the statement was published is dated Nov. 5, and distinctly shows that the mine at that date was not stopped, but in full and active operation, that a committee of management was elected for the four months then ensuing, and that funds were provided for further expenditure. Mr. Gould further states that "during these five months they had been accumulating their leavings, and the present workers, who have only eight heads of stamps, have sold 1180*l.* worth of tin since the concern was shut up which the old company ought to have sold. If they had been working with 24 heads of stamps they could very easily have converted all that into their own pockets during the five months in review. They would have made a profit instead of a loss." This statement I deem to be perfectly incorrect and the conclusion erroneous. Every exertion was made to swell the sales during the five months, in order to meet the expenditure, and there was no stock of tin stone on hand and no accumulated leavings that could at that time be made available. A large quantity of leavings had, no doubt, accumulated upon and about the extensive floors, in the bed of the 24 heads of stamps, and elsewhere, the right to work which was sold by auction with the other effects of the company in March of the following year. These have been, and are still being, worked over, but the present workers have been occupied nearly two years in returning this 1180*l.* worth of tin and copper, from which must be deducted the amount paid by them to the company, rent of stamps, cost of dressing, royalty, and carriage before the amount of profit realised can be known; therefore Mr. Goold, wishing to present an unvarnished account, was not justified in stating that we ought to have sold these leavings during the five months which he was reviewing, and equally unjustified was he in alluding to the whole of the sum realised by the sale of this tin and copper as a profit without deducting the cost of collecting, dressing, and returning it. The amount realised by the present workers from the tin leavings and halvans is large on account of the advanced prices of tin and copper since the former company ceased to work, and these advanced prices have enabled the present workers to return a considerable quantity of tin, which could not have been profitably returned by the former company.

Mr. Goold's speech would suggest the idea that the company had sold no ores from the date of the last sale mentioned in the account to which he referred, but that accumulations had been made and not returned for the benefit of the company. The sum realised by the company for tin and copper raised and sold between the date of the last sale to which he alluded and the date of the sale of the leavings amounts to 1183*l.* 14s. 3d., in addition to the sum paid by the present workers to the company. The sales were as follows:—Tin: Nov. 4, 361*l.* 13s. 6d.; Nov. 30, 204*l.* 7s.; Dec. 2, 120*l.* 6s. 5d.—Copper: Dec. 5, 153*l.* 10s. 3d.—Tin: Jan. 1, 1879, 172*l.* 0s. 1d.; Jan. 29, 90*l.* 9s. 6d.; and Feb. 28, 81*l.* 7s. 6d.

At the meeting of shareholders, held in January, 1879, when the mine was really stopped, a statement of accounts for four months was presented, which showed for the month ending Oct. 12 a loss of 262*l.* 0s. 2d.; Nov. 9, 433*l.* 10s. 11d.; Dec. 7, 465*l.* 8s. 8d.; and Jan. 5, 300*l.* 13s.; or a total loss for the four months of 1461*l.* 12s. 9d. The shareholders were informed by the manager that as all the richer parts of the lode had then been stoped away he would be unable to keep up even the then low rate of returns, and that if the mine continued to be worked, unless some fortunate discovery were made, the monthly loss would exceed that made in any one of the past four months. Upon being questioned by one of the Cornish shareholders present, he declared the bottom of the mine to be poor compared with what the upper levels had been.

At the time we were working the stopes in the 40 and 50, on Wilson's lode, and were opening the 60 fm. level, I had great hopes of the early success of the undertaking, but when the 70 fm. level was opened it proved a sad disappointment, which was only increased by cutting and driving on the lode at the 80.

I do not wish to say one word to depreciate the value of the mine as a future speculation, and the foregoing statement is made with the simple object of informing the public, or those whom it may concern, of the actual state of the undertaking when I ceased to be connected with it.—*London, Dec.* 2. ROBERT WILSON

WEST GODOLPHIN MINE.

SIR,—The gentlemen whose good fortune it was to secure and so nobly bring out this mine deserve congratulation, and there is no doubt but many old shareholders would gladly have joined to resuscitate it had they known it, as many consider it never ought to have been stopped. I shall look with some degree of pleasure for Mr. Wilson's letter in next week's Journal, as it is to be hoped that he will, in addition to the statements he objects to, state why the new pitwork was not taken up from the shaft before the mine was stopped, and sold with the other materials for the benefit of the shareholders, and when they may expect particulars about the winding up; also, if it was stated the amount the engines fetched, and whether sold by public auction or otherwise, as well as the amount had for the halvans, &c. It would be very interesting and valuable information to many persons, as well as to—

——— AN OLD SHAREHOLDER.

LEADHILLS MINING COMPANY.

SIR,—No doubt it is the denial of dividends which keeps the price of this mine so absurdly low. Would that our managing director would do for it what he has done for Devon Great Consols! What wonder is it that the British mining interest remains so depressed when the output of so many mines is kept just at a point to pay directors and agents, but not to leave a crumb for shareholders?

——— ONE INTERESTED.

LEADHILLS MINING COMPANY.

SIR,—In last week's Journal there appeared under this heading a somewhat harsh and inaccurate letter, signed "Another Holder." His harshness is at the expense of "Holder," who he accuses of puffing or misrepresenting matters in his letter of the previous week, in order to enhance the value of Leadhills. The only misrepresentation in "Holder's" letter, to which "Another Holder" draws attention, is so palpably a clerical error that no one knowing anything of lead mining or the lead market who had read the context could have been misled. The statement of "Holder" reads—"Even now I believe the monthly profits are upwards of 3000*l.*" Taken with the context, it was at once apparent that the sentence should have been "even now I believe the monthly profits are at the yearly rate of upwards of 3000*l.*," or something to that effect. The value of the 140 tons mentioned as the monthly returns is at the outside 1400*l.*, and however unscrupulous "Holder" may be he would hardly have endeavoured to lead your readers to believe that 3000*l.* profit could be made by raising and selling 1400*l.* worth of lead ore. With regard to "Another Holder's" inaccuracies, I would point out that the company was registered on Sept. 26, 1876, and thus has been in existence much nearer four years than eight. The 15,000*l.* dividends that have been paid are equal to nearly 3 per cent. per annum; granting that this is a "beggarly pittance to boast about," it is better than 1¾ per cent.

"Another Holder" goes on to state that "the fact of the manager having a large stake in the company is, in our case, no element of strength whatever. Men who are in the share business by profession may be just as much interested in the fall at one time as in the rise at another." This may be true enough, but I fail to see what it is intended to prove; as far as I can see, the only inference to be drawn is that "Another Holder" wishes to imply that the manager is a large "bear" of the shares, for if the large stake he holds in the company is shares he could hardly be beneficially interested in their fall. That the fall in the price of shares has been chiefly owing to the drop in the price of lead during the last three years, and not to the unnecessarily restricted output, is, I think, generally acknowledged. I may add that this restricted output of ore from the mines which puzzles "Another Holder" is, I believe, owing to the strong objection which the managers entertain against bottom stoping and such unminerlike work. I need hardly say that the directors are very large holders of the shares.—*Dec.* 2. F. F. WILSON.

LEADHILLS MINING COMPANY.

SIR,—"Another Holder" has, I am glad to see, the same opinions that I have as to the value of public criticism in reference to mining companies. It is amusing to see how, owing to a printer's slip in printing 3000*l.* instead of 300*l.*, he has credited me with a very absurd blunder. The present monthly profit is over 300*l.* and not 3000*l.* Had he been right of course we should both have had a nice dividend; and had he exercised a little reflection he must have seen the slip. Next as to the time this company has been in existence. The meeting held this month was the seventh meeting of the company's existence; as he may see by looking at the directors' report. Two such meetings are held each year. I am, therefore, accurate in my statement. It has paid the sum I named in about the time I named. "Another Holder" should look at his report for October last year, which was the fifth meeting, and he will at once see he made a very careless blunder. I must, therefore, suggest to him that he should rely on facts and not on his fancies, and not attack other people's facts merely because he is vexed at the market position of his property. We are both interested in its success, and both of us believe (at least so I gather from his letter) that it really is a good thing. Of course the low price of lead is an inducement to restrict our output, specially as we have a large stock of pig-lead on hand; though since our accounts were made up we have sold about 2200 bars of pig-lead. What we want to give us dividends more than any one other thing is a better price for lead, and that will come perhaps sooner than we expect. Meanwhile let "Another Holder" compare our accounts and directors' reports for this and for last year, and I am sure he will see the great advance the company has made. Even he cannot, if he will investigate for himself, feel any doubt that this concern is steadily improving. A HOLDER.

LEADHILLS MINING COMPANY.

SIR,—"Holder" has struck the right key in his letter of last week. This company suffers simply because it is not known as the largest British lead mining company ought to be. Why should we not have a quotation on the Stock Exchange? Our manager and secretary should see to this. Far smaller concerns are quoted and noticed each week in the Journal. As regards our real value "Holder," I think, has understated the facts. Twelve months ago, and during December last year, our shares were at 5 to 5½; now they are at 2¼ to 2⅜, and yet our position and prospects now are far better than then. Since that time the mine has been steadily improved, and is now improving. Then we had a large balance to the bad; now we have only a small one, which in a very few months will be completely extinguished. Now we make steady and increasing monthly profits of over 300*l.*, and, if only lead should rise, we could very largely increase this by larger returns. If our shares were worth 5*l.* then they must now, in spite of the low price of lead, be worth 7*l.* at least. All we want to speedily bring back our dividend days is a rather higher price for our lead, and a fair reduction in our royalty. The mine is in first-rate order at the dressing-floors, at the smelting-works, and underground, and operations are being carried on with energy. As "Holder" says, we want more publicity. We see mushroom companies of yesterday flaunted in every commercial paper. Our directors seem as if they were ashamed of our existence, and yet they are among our largest shareholders.

This very year (had we had no deficit on capital account due to former years to clear off, and no expensive dead work) we could have paid a fair dividend. Our profits were nearly 3000*l.*, dead work about 2000*l.* This would have given a profit of over 4 per cent. for the year. If you add to this the difference in the value of our actual returns, due to the fall in lead since 1878, some 4500*l.* must be credited. That is to say in 1878 we could have paid 9000*l.* and upwards on our actual returns of this year had no money been spent in dead work. This is a dividend of 7½ per cent., and 1878 was not a time of excessive prices for pig-lead.

When higher prices come we can augment our monthly returns, and we have good stocks of pig-lead all ready to take advantage of any such rise. I, therefore, altogether offer to my co-shareholders this advice—stick to your shares, and you will be amply rewarded before very long.—*Nov.* 26. ——— RELIANCE.

EAST CRAVEN MOOR.

SIR,—Having looked down the list of mines, and compared reports, sales of ore, and statements of these mines, I have come to the conclusion that East Craven Moor may justly be ranked amongst the good properties. The mine undoubtedly continues to improve, and opening out beyond the most sanguine expectation; the lode is still rich in the bottom of the shaft, and it must be borne in mind this lode has been worth 1½ to 4 tons of lead ore for nearly 30 fms. sinking. I find upon enquiry the company has some 4000*l.* working capital in hand, and that they are now making profits. They have raised about 350 tons of lead ore in a little over 12 months, and declared their first dividend from profits. The shaft is now down 76 fms., with a rich lode in the bottom. The lode in the 76 west is 3 ft. wide, worth 1¼ ton of ore. The 76 east is producing saving work. The 65 west is worth 1½ ton of ore. The 65 east is producing stones ore. Other points looking well, and 65 tons of ore smelting. No mine can show such results selling at the same price. These shares are certainly cheap at par. The facts prove a splendid mine is being laid open. A BUYER OF CHEAP SHARES.

Brighton, Dec. 3.

HERODSFOOT SILVER-LEAD MINE, AND CHEAP SHARES.

SIR,—I have frequently seen letters in the Journal written by those conversant upon mining respecting cheap shares. I doubt whether any of your numerous readers can point me out a cheaper share than Herodsfoot. The compauy has only called up 8s. 9d. per share, the present market value is about 1*l.* each, and the mine is working at a profit—in fact, it is doubtful whether any further outlay will be required. The mine is well stocked with ample machinery; some of their lead contains 60 ozs. of silver to the ton. They sampled two parcels of lead ore last week, computed 100 tons, and will have 120 tons more ready in six weeks; this is not bad for a mine with 8s. 9d. per share called up and shares at 1*l.* each, equal to 12,000*l.* only for the whole concern. Compare this with other mines selling for 30,000*l.* to 40,000*l.*, which are always about to cut a lode, or have an improvement or something else, which never takes place. Herodsfoot has paid 80,000*l.* in dividends, and will yet again before long. Another good share is West Phœnix at 37s. 5d. to 40s.; it is also cheap, because it adjoins a splendid old mine (Phœnix United), which has paid 200,000*l.* in dividends, and it not only adjoins it, but embraces the same lodes. West Phœnix Mine needs only to be seen, and its position, run of lodes, &c., explained, to prove to the most uninitiated it cannot prove a failure.—*London, Dec.* 3. AN INVESTOR.

THE MINING DISTRICT OF TAVISTOCK, DEVON.

SIR,—The parish of Tavistock is renowned for its Devon Great Consols, Crebor, Bedford United, Wheal Russell, Crowndale, and other celebrated mines, past and present, and the adjoining parish of Marytavy is again coming into prominence by the contemplated opening up of the side lodes of the Old Wheal Friendship Mine, for a great number of years so well known in connection with the great enterprises of Messrs. John Taylor and Sons in Devon and Cornwall. Marytavy is remarkable for its numerous lodes of copper, tin, and silver-lead, and it is a fact worthy of special note that although Wheal Friendship yielded such vast returns of copper which gave handsome dividends to the fortunate shareholders for something like half a century, and that Wheal Betsy returned hundreds of tons of lead, from which was extracted thousands of ounces of silver annually. No lodes have ever been tried to any extent outside the limits of these grants.

Old miners who have migrated to Tavistock, Gunnislake, and neighbourhood, talk of the fine gossan back laid open at West Wheal Friendship and the massive heaps thrown up from the backs of the Wheal Jewell lodes by old tinners for a mile in length, on to the granite range of Dartmoor. Other lodes immediately to the north of Wheal Betsy and elsewhere in the district are also highly spoken of, and these strong opinions of old practical men will doubtless lead to the vigorous development of the district, with its unlimited and unfailing supply of water power and with two railways forming a junction on the border of the parish. OLD MINER.

THE CALLINGTON DISTRICT, AND ITS MINES.

SIR,—Things appear to be looking still brighter in this district. In addition to our mining there is a clay discovery near the town that has been tested at the Tamar Terra-cotta Works, and pronounced to be very good for terra-cotta and pottery purposes, and within four miles of the quays at Cathele on the navigable River Tamar, so well known to merchant navigators. Some portion of this clay is as white as any china-clay that I have seen in the county, but I do not call it china-clay, as this is a decomposed clay-slate or killas. It is remarkably free from grout—indeed, I have seen more grout in 1 ton of some of the china-clay in the St. Austell district before washing than could be found in 150 tons of this. Some of your readers may think I have exaggerated, but it is not so. All the china-clay that I have seen has been produced by decomposed granite, and all the granite that I have seen between Penryn and Kithill—both places included—is composed of three ingredients only, quartz, fel-

spar, and mica; so it is only the one component part—the felspar—that can produce the clay; but as we have not seen anything so white and so pliable as what has been recently discovered here, I do not for a moment see why it should not answer the purpose of bleaching as well as if it had been produced from granite. I will give some more comments on this in my next.

Since my last the lode—the Lady Ashburton—has much increased n size, and producing more silver as they are nearing the shaft, where Dr. Sarjent gets his silver. It appears the aim of the present company is to get back under the shaft as early as possible, when they may reasonably expect the shares will go a long way above par.

There are new leases preparing for the Florence and Pengelly setts, to be re-worked under the name of Callington Great Consols. The Pengelly sett adjoins the Florence south boundary, and the Lady Ashburton by Ashburton western boundary. The Wheal Florence has returned more tons of ore for the number of fathoms of ground explored than any other mine in the whole district. I hope the shareholders will find it a profitable investment. JOHN BUCKINGHAM.

Callington, Dec. 2.

WEST CHIVERTON MINE.

SIR,—The other week a letter appeared in the Journal from "One Deeply Interested," respecting certain observations made by Captain Southey at the general meeting, on Oct. 19, as to the operations now in progress at the mine, particuly in the 80, east of Hawke's shaft, where there is every appearance of a good course of ore being opened out. "One Deeply Interested" evidently desires and intends that your readers should give him full credit for understanding all about West Chiverton Mine, both above and underground, and anything that he may say concerning it must be accepted as quite correct and true. His knowledge is so extensive that it would be a charitable act on his part to come forward and declare himself in his own name, so that the shareholders might in some way contrive to acquire the assistance of that knowledge in some practical form or other for the proper regulation of the utterances of their manager, who, according to "One Deeply Interested," would appear to have been trying to mislead his co-proprietors. If Capt. Southey had thought there was any need to refute what "One Deeply Interested" had to say he would, no doubt, have done so; but knowing, as he did—and as most of the shareholders know—that what was charged against him was tantamount to calling him "liar," he was content to treat the writer with the contempt he deserves, and ignore both the writer and the letter, and leave it for others to judge who is the honest man. I also am "deeply interested," and hold a considerable number of shares; but I have little hesitation—in constituting myself a temporary judge—in stating that I fully believe Captain Southey's statement to be perfectly trustworthy, which I have no doubt will have a good practieal realisation in the course of another week or two. Considering the anxiety which I know has been exhibited in certain quarters to become possessed of as many shares as were "comeatable," and the weekly improving reports which have been received from the mine, I can give a pretty good guess at the motive actuating "One Deeply Interested," and I can also calculate that he will be somewhat disappointed with the result. Shares are too tightly held, by those who know and appreciate their value, to be got hold of by such a course as that adopted by him. When we are just on the eve of discoveries, both in the 70 cross-cut and the 80 fm. level, which may be disclosed any day, and which are as likely as not to be of such a character as will send shares up to 20*l.* or 30*l.* each, it would be comparative idiocy to dispose of our interest in the good old mine at the present time.—*Dec.* 1. OBSERVER.

DISCREPANCY IN THE PRICE OF SHARES.

SIR,—I believe it has always been considered a very difficult problem. in connection with mining especially, to ascertain the real value of a share. Your correspondent, Percy Payne, in last week's Journal, calls attention to something of the kind in Dolcoath and Tincroft shares, which have not advance in price since June last, though tin has advanced 12*l.* per ton since that time. We should be glad, indeed, to see the shares quoted as near as possible their real value at all times, and even if we were furnished by the officials with the necessary information to form anything like an approximate estimate there would still, no doubt, exist a wide difference of opinion as to the value among mining experts. Be that as it may we should, nevertheless, be very glad to obtain, as a rule instead of the exception, the information necessary to form a correct estimate. The agents in the mines are, no doubt, as a rule the best qualified to furnish this information, knowing as they do everything that takes place from day to day; but their reports are so short and inexplicit generally that a practical mining engineer has often great difficulty in understanding them, or of forming anything like an approximate notion of the value of the workings they are endeavouring to describe. How, then, can the investing publie, who as a rule are not practical miners, be expected or expect to know the value of the mine; consequently their investments when not guided by practical skill often turn out unsatisfactory. In valuing a mine there are a great many other things to be taken into consideration. The way in which the accounts are kept; in some mines they are presented in the most satisfactory manner, whilst in others it is a practice to leave the accounts—such as merchants' bills—run on for nine months unpaid, and then often a three months' bill is given at the end of the nine months, making twelve months' credit. These arrears are, of course, not shown in the accounts presented, whereas the whole of the produce of the mine is credited even up to the date of meeting, and in far too many instances a great deal credited that has not been produced to the date of the meeting, and dividends declared, which of course gives, and in many instances intentionally, a fictitious value to the mine. These are really a portion of the claptraps we wish to see removed. The other portion is the way in which quotations are made up in many instances. I have no doubt your correspondent, Percy Payne, has taken his figures from quotations; and I have no doubt the quotations taken at the London Stock Exchange on a day when a good deal of business is done in the shares is the most satisfactory quotation of the market value you can get; but how often does it happen that there is very little doing in them, and "bears" or "bulls" go in and operate on them, and hold as it were the power of quoting them in their own hands for several days or even weeks or months. I have known shares quoted for weeks running at 6½ to 7¼, and the very person who was quoting them selling the same shares every day at any price down to 2*l.* 15*s.* So much for quotations and the real value of the mines affecting the price of the shares.

Another very potent influence on the price of shares is the number of buyers or sellers that may happen to be on the market, and the shares being in weak or firm hands—in fact, we may say these influences together almost exclude the value of the mine from governing the price of the shares. We have now a very striking example of this sort in two adjoining mines, South Frances nnd Wheal Grenville, just opposite, and on a parallel lode to Dolcoath and Tincroft. The former, South Frances, we have been most explicitly informed through the medinm of your valuable Journal, requires a large outlay to put it in good working condition. At the last meeting the dividend was suspended until this outlay is made, said to be 20,000*l.* or 25,000*l.*, or equal to a call of about 5*l.* 15*s.* per share, It was stated at the meeting that they had about 2000*l.* balance in hand, with a month's cost in arrear, and I believe an engine and other materials unpaid for, whilst the report stated that after a thorough renovation of shafts and machinery they hoped to resume paying dividends, whereas the latter mine, Wheal Grenville, has been furnished with good machinery, and will be in a position at the end of the year to pay a dividend equal to 10 per cent. per annum on the present price of the shares. Notwithstanding this South Frances are quoted 11*l.* to 12*l.*, and Wheal Grenville 10*l.* 10*s.* to 11*l.*, with the best prospects of improving its dividend of any tin mine in the county—in fact, if tin keeps only at the present price, and we expect it will go much higher, these shares will pay a dividend in a few months time equal to 20 per cent. per annum on the present price of the shares, which will no doubt put the shares to 25*l.* each. Here we have two adjoining mines. One is about to make a call of 5*l.* in the same period as the other will pay 5*l.* in dividends, and the one requiring the call is the highest price share according to quotations. How is this to be accounted for? The accounts we believe to be understood—or, at least, most distinctly so in Wheal Grenville—which are presented as they should be. The positions of the mines are also distinctly understood. Then evidently there must be some wrong quotation, or the shares must be more firmly held in one mine than the other; and we believe Wheal Grenville is the best tin investment now on the market, presenting under the circumstances a good opportunity of going in easy. We and a great many of our friends who reside in the neighbourhood of the mine have just gone into this mine. W NANCE.

Stanley-street West, North Shields, Dec. 2.

MINING IN CARDIGAN.

SIR,—Your correspondent, "A Looker-On," will, with an increased price in lead, soon see the output augmented. In passing over the correspondence as to the falling off in the production—amongst others the Goginan Mine is given, and many would come to the conclusion that it was the mine. It is not so—very little mining has been done there for some time. This will, however, shortly pass away, and this mine will be again vigorously worked by influential parties who have faith in this great lead-producing country and confidence in themselves to be persuaded that there are riches waiting to reward them. As a mighty torrent public opinion will one day turn its attention to home mines, and find the maxim true that "all that glitters is not gold." The resuscitation of the above important mine, and the activity shown by its near neighbour—the Bwlch United—as well as other adjacent mines in this group will cheer the hearts of the many willing workers. At the present time there is a very interesting point in the Bwlch; this is the drivage on the slide. Generally in Cardiganshire this leads to potent results for the owners, and it is worthy of remark in a mine in the same zone from this cause upwards of 100 per cent. per annum dividend was paid for 14 years, and at the end of that time the shares sold at 20 times their cost. Your correspondent also refers to West Lisburne. Few mines hold out such a chance. It was left in a state of production, so that almost immediate benefits will accrue, and full advantage can be taken of the large capital already expended. This mine is on the third group of mineral-bearing rocks (there appearing to be about six in the county) from which to the Devil's Bridge occur numerous mineral veins or lodes, and none more remarkable than the above, which is in the same zone as the celebrated Lisburne Mines, whilst a marked feature is the massiveness of its lodes, being in some places 12 ft. to 14 ft. wide.—*London, Nov.* 25. TRAVELLER.

NORTH WALES SLATE QUARRYING.

SIR,—I am glad that my letter has been the means of drawing attention to this home enterprise, which, if good judgment is shown in the selection of properties, should, it seems to me, with careful management prove very profitable. Some failures and mistakes have no doubt occurred, but insufficient capital would appear to have been the main cause of the former, and the absence of accurate scientific knowledge the main cause of the latter. "Silurian" has in last week's Journal done good service by specifying some of the new districts now open for quarry enterprise. VIATOR.

[For remainder of Original Correspondence see this day's Journal.]

REPORT FROM CORNWALL.

Dec. 2.—It will not surprise us in the least, but very much the contrary, if there are not a couple of substantial advances in the tin standard during the present month; and if the year does not close with prices of mining property generally in advance of any December for the last decade. It must be very evident now, even to those who have taken the most gloomy view of things, as so many are constitutionally prone to do, that in spite of market vagaries and manipulations there has been during the past twelvemonth a practically steady current of recovery, and that we may ere long expect to see—what we have so often been told would never again take place—mining once more placed upon an assured basis of prosperity, all the firmer and more assured for the vicissitudes through which it has passed. What has always given us the confidence expressed in these reports is a recognition of the marvellous "staying" power of Western mining adventure, and of the manner in which history shows that it has again and again recovered itself from the deepest depression.

We see the signs of this renewed prosperity not only in the improved position of existing mines, but in the rapid extension, once again, of the area of mining operations in directions where, more often from want of immediately available means than from any deficiency of mineral wealth, it had to withdraw—when the adverse tide set in. Under these circumstances, while abundant opportunities are presented for wise speculative investments caution is imperatively necessary. A more substantial basis of investment should be looked for than the mere glowing details of prospectuses, however laudatory; and Cornwall and Devon are so near at hand—for all parts of the kingdom—and the opportunity of acquiring independent advice so easy, that it is really the fault of people's own incaution if they are misled. People throw away their money and then lay the blame upon anybody but themselves; whereas prudent investment in mining property is, under ordinary conditions, as wise an employment of capital as could well be adopted—a good deal more sensible than the purchase of Consols above par!

The Mining Institute of Cornwall had the benefit on Tuesday of an exceedingly valuable paper suggesting improvement in underground operations by Capt. Josiah Thomas, of Dolcoath, the chief point of which was the suggestion that mines might be properly developed without driving a number of levels simultaneously and so close together as has been the rule. Already something has been done in this direction by increasing the distance between levels from 5 to 6 fms. up to 10 or 12 fms., and even in a few instances 15 fms., but Capt. Thomas submitted that where the deposits were far apart there was no necessity whatever to drive levels every 10 or 12 fms. through long pieces of unprofitable ground, but that the distance between levels might very advantageously be increased to 30 and even 40 fms. In those parts where the lode was found to be continuously productive for a great length the plan of driving levels only 10 or 12 fms. apart was not so very objectionable, but even then it would be advisable to drive as few levels as possible, for the cost of driving levels might always be reckoned at twice the cost of stoping the ground after the levels had been driven through it, whilst in very hard ground the cost of driving was about three times that of stoping. Since the introduction of boring machinery the difficulties in the way of such a plan had been almost entirely overcome. Some improvement, however, might be made in the draining of winzes, or keeping them free from water. In some winzes the quantity of water was so great that it was only with considerable difficulty and cost that it could be drawn out. But sometimes the quantity of water was so great that it could not be drawn out by manual labour at all. When such a winze was within easy distance of the engine-shaft a lift of pumps was frequently fixed therein, and worked by a chain attached to the rod of a pumping-engine. In some situations, however, this could not be done, and he, therefore, suggested that where there was compressed air underground for working boring machines a small pump to be worked by that power might be successfully and economically employed. Compressed air might also, he thought, be advantageously employed in drawing the stuff out of winzes instead of the usual system of raising it by means of a windlass. To do this a small skiproad might be fixed in the winze. Capt. Thomas next directed attention to the necessity of rapid exploration of ground in some cases, remembering that "time was money." A case came under his observation recently in which an end was being driven by six men at a cost of 12*l.* per fathom, and they could only succeed in driving about 2½ fathoms a month. In order to do this small amount of driving a pumping-engine had to be kept working at a cost of 100*l* a month, and when to this the cost of agency and other establishmen chaages were added, the actual cost of driving that one end was really 60*l.* a fathom. Now, if in this case a single boring machine had been employed the level could probably be driven at the rate of 7½ fathoms per month instead of 2½ fathoms, thus reducing the actual cost of driving to 98*l.* per fathom instead of 60*l.*, whilst by using two boring-machines in the same end 12 fathoms per month could probably be driven at a total cost of 22*l.* 10*s.* per month. The establishment charges would be about the same whether the mine was rapidly developed or not.

The discussion to a large extent turned upon the question of power, and the want of economy in the use of compressed air was strongly insisted upon. This, however, Mr. Husband held was due to the defects of the present air-compressing plant, expressing his belief that by the use of proper means air could be compressed in the county at half its present cost. Capt. Rich made a good point when he alluded to the use of water-power underground. The transmission of power by means of hydraulic machinery has worked so well where it has been adopted that it is a marvel it is not better known, but, of course, with machine boring in operation it is natural to endeavour to utilise the same source of power as far as possible. For actual working small "pares," and many of them are undoubtedly, as Capt. Teague said, the best means of distributing labour.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Dec. 2.—Upon 'Change in Birmingham to-day, and in Wolverhampton on Wednesday, there was slightly more activity noticeable in connection with the finished iron trade. Marked bar makers were firm in their demand of 7*l.* 10*s.*; medium quality bars were less neglected at 6*l.* 5*s.*; and common sorts were fully enquired for at from 5*l.* 12*s.* 6*d.* to 5*l.* 17*s.* 6*d.* per ton. Pigs have seen an improvement upon the quarter of 2*s.* 6*d.* per ton. From 2*l.* to 2*l.* 2*s.* 6*d.* was mostly quoted for cinder pigs, whilst all-mine sorts could not be bought at less than 3*l.* 5*s.* Coal was in increasing sale. Cannock Chace deep fuel is from 10*s.* to 11*s.* at the pits, and shallow coal 8*s.* 6*d.* per ton.

Recently several of the members of the South Staffordshire Mines Drainage Commission have withdrawn their active opposition to the proposition for extending the boundaries of the Tipton district, so as to include a portion of the Bilston district, and on Wednesday, at a special meeting of the Commissioners in Wolverhampton, the arbitrators were unanimously authorised to take steps for the amalgamation of the two districts. The Chairman was authorised to negociate a loan sufficient to pay off all the present indebtedness of Tipton, and to enable the Commissioners to unwater the Bilston mines. The course decided upon is very important, inasmuch as if carried out it will give a considerable impetus to the South Staffordshire trades as a whole. At the present time the Bilston district is almost entirely drowned out.

The sinking of the iron tubbing in No. 2 shaft at the Cannock and Huntington Colliery is being continued, and 61 tubes or cylinders out of a total of 88 required to line the water-bearing strata have been successfully lowered. It is hoped to have the other tubes in position by the end of the week, after which the work of filling in the vacancy between the outside of the tubbing and the earth with concrete will be commenced. After the iron column has been cleared of the accumulated water sinking by the ordinary process will be resumed.

The miners employed in the Cannock Chase district held a meeting on Tuesday to decide whether the Employers Liability Act having been passed, an insurance society or permanent relief fund should be formed. The basis of operations proposed was that the masters should subscribe 25 or 30 per cent. to the fund, and the men pay into it the moneys at present paid over to the field clubs. It was further proposed that compensation should be given for every person injured in the pit instead of compensation for those who might be injured through the negligence of the employers or their officials. The men expressed themselves as willing to adopt such a scheme, providing they did not contract themselves out of the Act.

The mills and forges of North Staffordshire are fairly well employed. Enquiries for good lots have been received, but as they are mostly for forward delivery at present prices, makers do not much care to book them. Prices are low, but somewhat stronger. Pig-iron is steadily improving. For the best class of pigs forge proprietors are offering an extra 2*s.* 6*d.*, and for the commonest metal 40*s.* is the ruling price. Crown bars are steady at 7*l.* to 7*l.* 5*s.*, but other sorts are 6*l.* 5*s.* to 6*l.* 10*s.*

A special Court sat at Wednesbury, on Wednesday, for the purpose of dealing with cases of infraction of the Mines Regulation Act. The summons against Mr. Isaac Horton, owner of the Black Lake Colliery, in respect of the explosion there in June, was dismissed, the Bench thinking that the manager, if anyone, should have been summoned; but John Hough, manager of the Cop Hall Colliery, West Bromwich, was fined 5*l.* and costs for having neglected to provide adequate ventilation, the result being an explosion in January last. James Timmins, of Wednesbury New Mine Colliery, was fined 40*s.* and costs, in each of the cases the offence being a neglect of the 22nd and 29th general rules. Mr. John Kimberley, owner of the Crab Tree Colliery, was also fined 20*s.* and costs for neglecting the 14th section of the 18th general rule.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Dec. 2.—There has been little or no change in the state of affairs in connection with lead mining, but some interest has been shown in the appeal case of Wake *v.* Hall, in which the peculiarities of the Derbyshire lead mining laws have been brought out most forcibly. That these laws, however applicable to the state of affairs which existed some hundred of years, are now in every way unsuitable to the existing times, when right and not might is the most powerful. It was an appeal from the decision of Lord Coleridge, and was commenced on Tuesday in the Court of Appeal at Westminster. The appellents were miners, and the respondent the owner of the land where the former had sunk for lead ore, but had not prosecuted the work of raising the ore, and gave the mine up in 1872, when the plaintiff claimed it. Some old ironstone mines have been abandoned in the coal mining districts, it appearing that stone can be obtained from a distance cheaper than it can be worked close to the blast-furnaces. The make of pig is well kept up, and there does not appear to have been any falling off in the demand, so stocks have not much increased. A good deal is used up at the furnaces, such as those at Staveley and Stanton, where there are extensive foundries well known for pipes and heavy castings. Engineers and wagon builders have been doing well of late, whilst steel rails have been largely produced. The collieries have been working well, seeing that house coal has been in active request for the London and other markets. Prices have advanced, and at one place the men have made a demand for an advance of wages, which has not been conceded. Steam coal does not go off quite as well, and prices have a downward tendency, as is usual at this period of the year. A steady business, however, is being done in gas coal, several firms having good contracts in hand. In other descriptions of coal there has not been much change of late, the quantity of engine fuel being sent into Lancashire not being so large as it was some time since. A good deal of coke is being made, which sells well, seeing that it does not lie on the ground.

Trade in Sheffield continues good, and no complaints are likely to be heard this side of the new year as to slackness in any branch. The town may be said to be in mourning, having lost its worthiest citizen, Mr. Mark Firth, the great steel smelter, and so well known for his munificent gift to his native town. Commencing business along with his father and brother in a small way the concern became one of the largest known, not only for steel but for rifle barrels and ordnance of every description in which steel was the principal ingredient. In the making of steel there is considerable activity, more especially as regards Bessemer, for the consumption is now large at the various rolling mills engaged in turning out rails and railway materials. The activity at most of our shipbuilding yards is of considerable benefit to the town, seeing that it has its share of the plates required. Sheets and hoop iron are in good request, and some fair orders are in hand for telegraphic and other wire. The cutlery houses, as a rule, are doing well. Skate makers are more than usually busy, although as yet there has been little or no skating, and scissors makers keep tolerably busy. At the foundries there has been very little change of late, and at few of them is business at all brisk. Makers of pig-iron have been doing tolerably well in ordinary brands, and a considerable quantity of hematite pig is imported from a distance.

The coal trade of South Yorkshire continues tolerably good so far as household qualities are concerned, and more is being done with the Metropolis, but the quantity could be doubled were the rate by

the Great Northern Railway less than it is, but at 8s. 3d. per ton it is a great drawback to the development of the trade in that direction. Steam coal is not in such request as it was two or three months since, shipments to the North of Europe from the Humber ports having been stopped until the spring. Gas coal is being extensively sent away in the carrying out of contracts entered into in the early part of the year, so that prices have not improved as many persons believe to be the case. This view is shared in by the miners, who now expect an advance of wages, forgetting the fact that during the greater part of the year the collieries were worked at a loss. However, there is not likely to be any serious dispute, for if wages are low the men are working six days a week instead of four, as was the case during the summer months. Makers of coke have been favourably off for business; and, as it is made from the small coal, it is the most profitable part of the coal trade.

On Monday last Mr. George Dawes, the well-known ironmaster, of the Milton and Elsecar Works, was presented with his portrait in oil. Mr. Dawes has had the works for more than 30 years, but now appears desirous of seeing the vast establishment he has so long been connected with in the hands of a younger man, stated that he now only holds them as a yearly tenant under Earl Fitzwilliam.

TRADE OF THE TYNE AND WEAR.

Dec. 2.—The general trade on these rivers continues to improve. This is evident from the returns of the railway traffic in the district, and the exports and imports, yet commercial men generally complain that trade is dull and flat. This shows that the late depression has been very severe, and that the lowest point reached must have been low indeed. Iron shipbuilding is almost the only branch of trade which is very brisk, and in consequence builders of marine engines and boilers are extremely busy, and some of them—Messrs. Palmer and Co., at Jarrow, Stephenson, Newcastle, and others—are pushed to the utmost, the machines working night and day. On the whole engineers are getting into fair work, but few have any amount of land engines and boilers on hand. Messrs. Stephenson, Newcastle, have 30 locomotives in hand for the Midland Railway, and these old celebrated works are fully employed. At Sir W. Armstrong's works at Elswick there is a large amount of work in hand of various kinds. In Gateshead the rolling mills and engine works are fairly employed, but few of the works are busy. The coal trade on the whole appears to be progressing towards a more healthy state. House coal has improved considerably during the past month, and the price has been advanced considerably. The steam coal trade, though not very brisk, is as good as can be expected for the season, and there is a fair demand for second-class coal, and for manufacturing and small coal. The demand for coke is good, and if the iron trade continues to improve there is little doubt that the demand will soon again exceed the supply. The coke contracts for next year are made to a great extent, but sellers refuse to commit themselves beyond six months, as it is expected that it will then have increased value.

On Saturday last a meeting of engineers and Government Inspectors was held at Seaham to discuss the question of opening out the workings in the Maudlin seam, which have been sealed up since the explosion. The proceedings were private, but we now learn that owing to the indications of the temperature at the pipe in the dams being variable it is concluded that the dams are not tight, or that air is passing through some crevices in the strata, and it is decided to erect additional dams, and proceed with the observations as to the temperature, so that the opening out of the workings in the seams is indefinitely postponed.

The Northumberland and Durham coalowners have agreed upon the course they wish to adopt respecting the Employers' Liability Act, and they have submitted a proposition to the miners through their representatives, Mr. T. Burt and Mr. W. Crauford. The colliery owners desire that a friendly arrangement should be arrived at which would prevent lawsuits, which must inevitably ensue unless an amicable agreement is come to. It appears that the colliery owners contribute at present in various ways for the benefit of workmen injured and their relatives when killed 30,000*l.* per annum. The owners state that they cannot continue their payments and at the same time remain liable to pay compensation under the Act. They, therefore, propose that the workmen agree to become members of a mutual association such as the Northumberland and Durham Miners' Permanent Relief Fund formed by the two parties, from which they shall receive compensation for accidents of every description, and in case of death their relatives receive as ample compensation as they could do under the Act. If this is agreed to the owners will be willing to continue the voluntary payments made at present, and also increase their payments to the Permanent Relief Fund, &c. Should the workmen determine not to enter into this arrangement the masters will be obliged to protect themselves by insurance against claims for damages to which they may be liable, and the workmen on the other hand will have to protect themselves against the accidents for which the owners are not legally liable. It must be conceded that the colliery owners of these two counties have always acted in a very liberal manner towards those workmen who have been injured by accidents in the mines, and the liberal patronage they have accorded to the Miners' Permanent Relief Fund is a proof of this. The proposal they now make appears to be a fair and equitable one, and if it is accepted it will benefit all the parties concerned.

The iron trade continues quiet, but firm, with little change in the value of pig or manufactured iron. The Scotch iron market rules this trade to a great extent, although less than half the quantity of iron is made there, as compared with the quantity made in Cleveland, but large stocks are held in Scotland, and there is much speculation, the iron being held there by men of capital. The demand for Cleveland pig-iron in the Midlands is rather checked by the railway rates charged (12s. per ton), as the cheap ores of Northampton compete with it there. The finished iron trade is steady, and, indeed, there is much pressure for plates.

COLLIERY EXPLOSIONS.—The article of Mr. Plimsoll on this subject, published in a leading London review, is well worthy of the most careful and serious attention; it is evident that he has paid much attention to this intricate subject, and the amount of knowledge displayed of the gases met with in mines is certainly remarkable. With respect to blowers, which occur in many mines, sometimes from the roof, but in our experience they have generally come from the thill, or bottom of the seam, he does not appear to be at all clear, and appears to doubt that the gas exudes from those blowers with the force stated. We can state that we have seen many of those blowers, and the force of some of them was certainly tremendous—certainly equal to the force of steam from a high-pressure boiler (say) pressed at 100 lbs. per square inch; and some of those blowers we have know to give off gas many years after their origin, some as much as ten years. It is evident, therefore, that this gas must exist *in situ* in a state of great tension; it has been supposed by some mining engineers that the gas exists in a solid state, and this appears to be probable if we consider the facts we have stated. Mr. Plimsoll is naturally very anxious that some should be devised to get rid of the explosive gas met with in mines, and thus prevent explosions, and he dwells much on the fact that this gas naturally ascends upwards from its specific gravity, as water descends downwards from the same cause. The means he proposes would not, we submit, effect the object; the gas to a certain extent could no doubt be collected into a recess at the top of the rise workings, but the attempt to carry this gas by a pipe downwards to the downcast shaft and to the surface up that shaft would prove utterly futile, no pipe of sufficient capacity could be inserted even if it were possible to separate the explosive gas from the ordinary air. Measures of a more comprehensive nature are required to effect the desired purpose. We give below a short sketch of the progress of coal mining in the North from the earliest times, and some rough notes on colliery explosions and ventilation.

The old men who worked the coal on the Wear and Tyne 500 years ago commenced to work the coal at the rise or outcrop, and afterwards worked the deep coal until they were stopped by the water. This method drained the gas off to a great extent to the rise, but proved disastrous in the end, as it admitted the surface water into the lower workings. As the art of coal mining advanced shafts were sunk to greater depths and in considerable numbers, which was imperative, as ventilation was little understood and the safety-lamp had not been invented, and yet explosions were but too common. About the year 1820, when safety-lamps were getting into use, single shafts were sunk in some cases to a considerable depth, up to 150 fms., and those shafts were divided into two or three divisions by wood brattices, and considerable quantities of coal were worked by those single shafts. The peculiar and dreadful accident at Hartley put an end to this system of single shafts. This system was open to serious objections. In case of an explosion the brattice was frequently destroyed. and the ventilation of the mine was seriously deranged or entirely destroyed, and thus the chances of any of the men escaping were small indeed.

Two shafts have in all cases been sunk since that time, and as powerful furnaces and mechanical ventilators have been introduced, the large amount of air put in circulation, together with the use of safety-lamps in fiery mines, has made it possible to work safely large tracts of coal by two shafts. The general question has been already opened as to more shafts, but what the question really means or leads to has not, so far as we are aware, been stated; it will not be contended that any amount of acres of coal can be worked safely and economically by means of two shafts, there must be some limit.

It is generally stated by writers for the Press that two shafts, large shafts of course, sunk to a great depth are so very costly that any additional shafts to be sunk would involve so much cost as to prevent the possibility of working such coal at a profit, but this statement appears to be vague, not much to the point, if it is once admitted that a limit must be fixed to the extent to be worked from two shafts (and a denial of such limit would be absurd), the question arises whether one or two additional shafts ought to be sunk—that is, whether one shaft should be sunk in connection with the first two shafts, or two new and independent shafts should be sunk. If a third shaft were sunk in connection with the first two shafts, under any circumstances it is evident that for the outlay some advantages would ensue; if it was merely an air shaft the length of the air courses would be greatly reduced, and the cost of maintaining them would be reduced in proportion. It is also clear that three shafts would give the power to work a larger area of coal than could be worked by two shafts. But, apart from the question of the area of coal to be worked by means of two shafts, the question remains respecting the rise workings. There is also much difficulty in keeping the workings in those parts clear of gas, and more especially there is difficulty in keeping the goaf found in these districts clear; of course where the rise of the strata is great the difficulty is much increased.

It has been proposed by writers during the past 20 years to sink shafts at the extreme rise, and erect mechanical ventilation at those shafts, and some have proposed to put down large bore-holes at the centre of large goafs for the purpose of freeing the gas there lodged; but even in the case of bore-holes it would be necessary to provide means for exhausting the air from those holes, and thus inducing an upward current, otherwise it is probable that those holes would be down-casts, and the gas would be forced into the workings instead of being drawn from them. On the whole, the sinking of shafts of moderate size, if this could be done by any means cheaply, at or near the extreme rise appears to be the most feasible means of grappling with this acknowledged formidable difficulty; or when the rise of the measures is considerable it might perhaps be advisable to limit the extent of the workings in that direction as compared with the workings on the level plane, and to the depth of the shaft. It cannot of course be expected that colliery-owners or other capitalists can expend large sums of money unless there is a prospect of a fair return for the expenditure, but they are bound if possible to prevent explosions so far as their own interests are concerned, as they incur very heavy penalties in the shape of expenses when they unfortunately do occur, and there is no doubt that in the long run safety and economy will be found to be combined.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Dec. 1.—Referring to the letter of Mr. Geo. H. Keene, Managing Director of the Cambrian Mines, which appeared in last week's Journal, and which, to say the least, was needlessly offensive, I give the following extract from page 22 of the Government Mineral Statistics for 1879, the source whence I derived my information:—

	Copper ore.	Fine copper.	Value of ore.
Wales—Cardiganshire... Cambrian Mines...	300 tons...	39 tons 10 cwts. ...	£1500.

Presuming that the compiler of the statistics obtained his information from the authorities of the mine, it is due to me, to the Journal, and to its readers that after his letter of last week Mr. Keene should explain why it was that information which he says is incorrect was supplied.

Referring once more to the Tankerville Great Consols, the impression in local mining circles is that the amount of capital reserved for development and working is too small, and bears too small a proportion to the total capital of the company.

Perhaps a few condensed particulars relative to the mines of Carnarvonshire may not be unacceptable to the readers of the Journal in that county. Last year there were 37 mines in the county, being three fewer than in the year before. Of these, two—Carnarvon and Drws-y-Coed—were copper and the rest lead or lead and zinc, and one—Tan-y-Bwlch—lead and copper. The production of copper was 558 tons, of the value of 3526*l.*, showing a decrease of 251 tons in amount and of 2826*l.* in value as compared with 1878. In that year the production of copper exceeded in value that of the Anglesea mines. Twelve mines returned lead ore to the amount of 2009 tons, and of the value of 19,890*l.*, or slightly under the production of 1878. The chief producers were Tan-y-Bwlch, 734 tons; West Assheton, 542 tons; Pandora, 292 tons; and Assheton, 207 tons. Llanrwst, which produced 350 tons in 1878, fell off to 45 tons 12 cwts. last year. The amount of silver in the ore scarcely averaged 3 ozs. to the ton. Four of the mines returned 667 tons of zinc of the value of 1746*l.* Among these Aberllyn took its place with 154 tons, Pandora yielding 202 tons, and West Assheton 268 tons.

The most productive mines of this county, as proved so far, are those situated in the southern part ot the county. It is a question, notwithstanding the immense sums of money spent in the mines of Llanrwst district, whether that district has as yet been properly proved as a lead mining district. The south-west corner of Wales, which hitherto has been without railway communication, is now to be approached by three lines. The Maenclochog Railway is extending towards Newport; and both the Carmarthen and Cardigan and the Whitland and Cardigan are about to apply for parliamentary powers to extend towards the last-named town. The Great Western Railway Company have also, in their general Bill, several provisions for extensions and for the acquisition of land to make their lines about Minera and between Bala and Festiniog more complete. A proposition has been made to work the Shrewsbury and North Wales Railway, which has been closed for some time, for local benefit by means of a voluntary rate, to be paid by the adjacent owners and occupiers. I fear difficulties will be found in the way of working on such an arrangement, but it is worth a trial. The road authorities have come down upon the Roman Gravels Mining Company for payment for excessive damage to the road by which the ore is carted to Minsterley. They claimed 195*l.* 14s. 7d., but the magistrates only awarded them 59*l.* 1s.

SOCIETY OF ENGINEERS.—The next ordinary meeting of members will be held on Monday, in the Society's Hall, Westminster, a paper will be read on the National Value of Cheap Patents, by Mr. Frank W. Grierson, the leading features of which are as follows:—That invention is the foundation of our prosperity, and that we can look solely to invention for material advance; that the United States are distancing us as an industrial nation because they afford greater facilities than we do for the practical development of the inventive faculty; that while patents confer on the inventor a small advantage, they confer a much greater advantage on the country as a whole. Comparison of the stamp duties on patents in the United States and Great Britain. The American view of the beneficial action of patents the correct one. The results of the two systems illustrated statistically by tables and diagrams. Mr. Stansfield's proposal for reducing stamp duties, and Mr. Anderson's proposed schedule of fines for postponed payments. The official technical examination of applications for patents.

MANCHESTER GEOLOGICAL SOCIETY.

The first ordinary meeting of members was held on Tuesday, at the Literary and Philosophical Society, George-street; the PRESIDENT (Sir Ughtred J. Kay-Shuttleworth, Bart.) in the chair.

ROCK-SALT BEDS IN NORTH LANCASHIRE.—Mr. JOSEPH DICKINSON, Her Majesty's Inspector of Mines, in a note "On the discovery of rock-salt at Preesall, Lancashire," said:—It will not be surprising to those who are conversant with the geology of the neighbourhood of Fleetwood that rock-salt has recently been sunk to at Preesall. In an official report made by me on the salt districts relative to landslips, and printed by order of the House of Commons May 6, 1873, and in information given by me to this Society, I have attributed the ancient brine-spring at Barton, near Downholland (mentioned in Baines's "History of Lancashire") as well as the subsidences of land by which the Guttern and White Otter Meres, near Birkdale, Southport, and the subsidences with encroachments of the sea at South Shore, Blackpool, and further north to near Ulverston, to the solution of rock-salt. Mention has also been made by other members of this Society of rock-salt having been met with in a bore-hole put down some years ago at Fleetwood. The new exploration at Preesall, however, having been successful gives the subject an additional interest; and I am happy in being able, with the consent of Mr. R. Howson, of Middlesborough-on-Tees, by whom and his friends the exploration has been made—and from my own knowledge—to give the following particulars. The site of the exploration is about half-a-mile south-west of the village of Preesall, and about a mile and a half in a direct line south-east of Fleetwood. A shaft 8 ft. in diameter, bricked throughout, has been sunk to a depth of about 309 ft., and from the bottom of it a bore-hole has been put down, making the total depth proved 525 ft. The strata passed through were ordinary saliferous marls and marstones, some containing gypsum, which continued to a depth of 258 ft. 6 in. At that depth rock-salt, was met with, which, with divisions or partings, continued for 266 ft. 6 in. to the bottom of the bore-hole without being got through. This thickness of rock-salt is similar to that met with in the salt districts of Cheshire, and county Antrim, where rock-salt is being worked, and to what has been proved by boring at Middlesborough and Port Clarence, near the mouth of the Tees, and also at Stoke Prior, Worcestershire.

TEMPERATURE IN DEEP SINKINGS.—Mr. HERBERT WOODWARD read a paper on the temperature of strata in the Newtown Colliery sinkings of the Clifton and Kersley Coal Company. The sinkings in question were carried to a depth of 1715 ft. The average increase of temperature, Mr. Woodward said, in the coal measures was 1° in each 55 ft. vertical; but the rocks and metals in the sinkings under consideration increased in temperature 1° for each 69 ft., the average for both rocks, metals, and coal being 1° in 61 ft., nearly.

MARINE FOSSILS AT ASHTON MOSS.—Mr. GEORGE WILD read a paper upon the marine fossil shells found in the Ashton Moss Colliery sinking, of which seme particulars have already appeared in the Guardian. The effect of this discovery is to prove the non-existence of a fault which had previously been supposed to exist in the strata between Manchester and Ashton-under-Lyne.

THE OLDHAM "ARCTIC PEAT BOG."—A paper by Mr. W. Watts, F.G.S., engineer of the Oldham Corporation Waterworks, "On a supposed discovery of an Arctic peat bog near Oldham," was read, in the absence of the author, by Mr. S. MARTIN, hon. sec. Mr. Watts described the physical features of the district in which the supposed Arctic bog is situated, and said that whatever the deposits above the section might have been, the peat was now embedded in arenaceous matter, and not in typical boulder clay. The true boulder clay, however, was found hard by, but the coarse debris of which the section was composed had been reassorted by the agency of water, and relieved to a great extent of its argillaceous matter. As to when this reassorting occurred there was no precise data for present guidance, but in Mr. Watts's opinion it was subsequent to the uprising of the land and since the glacial epoch. The peculiar position of the great section rendered it extremely probable that it was formed in a depression of the land, and the coarse matrix surrounding the peat was subsequently washed in by the agency of water until filled level with the surface of the adjacent ground. A thin layer of blue clay reposed beneath the peat and formed its under-seating. This clay could only be formed in a depression where the water that removed it in suspension was brought to rest. The hypothesis as to this peat deposit being of Arctic origin was, Mr. Watts thought, based upon too slender evidence. Even admitting that essentially Arctic mosses had been found in the peat (which was doubtful), that did not prove them to have lived in pre-glacial or mid-glacial times, but a colder climate existed when they grew.—The paper gave rise to some discussion, Mr. Aitken, Mr. Plant, and Mr. Wild coinciding with the views of Mr. Watts, whilst Mr. W. Horsfall, Mr. Hollingsworth, and one or two others supported Mr. Wild's (the discoverer's) theory of the Arctic character of the bog.

CASSELL'S PUBLICATIONS.—Science for All, part 37, contains—How Plants are Distributed over the Earth, by Dr. Robert Brown; an Eclipse of the Sun, by W. F. Denning; a Clod of Clay, by F. W. Rudler; a House-fly, by Arthur Hammond; and Meteoric Stones, by G. F. Rodwell. The style of printing and the numerous illustrative engravings are of their usual excellence.

MECHANICS' ALMANAC.—The eight annual edition—that for 1881—of Calvert's Mechanics' Almanac (Manchester: John Calvert, Great Jackson-street) has just been issued, and, as usual, contains a vast amount of information of value and interest to mechanics of all classes. As the technical contents are annually changed, those using it may constantly add to their store of knowledge.

MATERIALS AND CONSTRUCTION.—A volume of Weale's Rudimentary Series has just been issued by Messrs. Crosby Lockwood and Co., of Stationers' Hall, which is calculated to be of great general utility—Materials and Construction: a theoretical and practical treatise on the Strains, Designing, and Erection of Works of Construction, by Francis Campin, C.E., past president of the Civil and Mechanical Engineers' Society—the writers object having been to produce a work dealing comprehensively with the subject of materials and their use in certain branches of constructive art—the massive works usually entrusted to civil engineers and architects, and treating it in such a manner that, although scientifically accurate, it shall be perfectly intelligible even to those unable to avail themselves of the higher branches of mathematical investigation. It is needless to say that the volume is a careful and systematic work, and appears to be in every respect reliable.

THE "HOLLY BOUGH," by which name the Christian Herald annual is well known, this year presents a greatly improved appearance, the printing being as usual excellent, and the wood engravings, which last year were somewhat wanting in finish, now leave nothing to desire. As to the tales and poetry they are well calculated to suit the taste of those amongst whom the annual circulates. They include Honest John Stallibrass, or the Cottage by Craigmuir-Neb, by the Editor (the Rev. J. J. Wray); Queen Victoria and the Tomb of the Princess Alice, by Samuel Wray; the Shepherd's Quest, the Perspective; A Chrismas Waif, by Mary Baskin; the Beggar Girl, Magdalen's Story, by Annie F. Wallis; Lucky Mark Riddle, by Samuel Wray; Little Tom Tucker; Our Madge; Arnold's Atonement, by W. Chisholm; Merry May, a page of pleasantries; and Maggie's Motive, or the Strong Constraint. The prose pieces are all carefully written, and designed to advocate temperance and demonstrate the evils of drunkenness; and Mr. Samuel Wray's poetry is easy and accurate. The annual is well worthy of extensive patronage.

TRAMWAYS.—From a Parliamentary paper we learn that for the year ended June 30, 1880 there was a total of capital authorised of 9,210,758*l.*; paid-up, 5,691,669*l.*; expended, 5,665,465*l.*; and a length of 368 miles open for public traffic. The total number of passengers carried was 173,067,103; the gross receipts were 1,342,933*l.*; the working expenses, 1,113,094*l.*; leaving a balance of 229,839*l.*, as net receipts.

Registration of New Companies.

The following joint stock companies have been duly registered:—

North Green Hurth Lead Mining Company (Limited).—Capital 9600*l.*, in shares of 1*l.* The searching for, winning, and working of lead ore, sulphate and carbonate of barytes, ironstone, iron ore, blende, calamine, and other minerals in certain lands situate in the county of Durham or elsewhere. The making, composing, smelting, preparing, manufacturing, selling, and disposing of lead, lime, cement, coke, blende, &c., and any other substances raised, purchased, or obtained by the company. The subscribers (who take one share each) are—E. Reid, Newcastle-on-Tyne, merchant; E. Sisterson, Newcastle-on-Tyne, merchant; A. T. Winship, Newcastle-on-Tyne, mining engineer; C. F. Jackson, Newcastle-on-Tyne, merchant; G. Fenwick, Newcastle-on-Tyne, merchant; J. W. Swan, Newcastle-on-Tyne, chemist; G. C. Hassell, Newcastle-on-Tyne, agent.

The Corporation of South Australian Copper Mines (Limited).—Capital 250,000*l.*, in shares of 1*l.* To purchase or otherwise acquire lands, estates, mines, mineral grants, mining rights, and privileges, shares, ores, minerals, and other properties in South Australia or elsewhere. To adopt and carry into effect an agreement made between T. A. Masey, of the one part, and S. A. Cobbett, as trustee for the company. To carry on generally the business of miners and engineers, smelters and reducers of ores and minerals, and to purchase, treat, crush, reduce, smelt, and sell and dispose of any ores, minerals, metals, and other substances. The subscribers (who take one share each) are—C. Rogers, 1, Winchester House, merchant; W. H. Dunn, Clapton, accountant; S. A. Cobbett, 1, Winchester House, secretary; R. Hancock, Barnsbury, clerk; H. A. Masey, Brixton, secretary; A. Greener, 6, Gracechurch-street, registrar; E. J. Honychurch, 235, Gresham House, accountant. The first directors are—Lord Headley, the Hon. J. H. De Ricci, W. Baxter, P. Carnegy, and J. L. Montefiore.

The Kirk Michael Mining Company (Limited).—Capital 20,000*l.*, in shares of 1*l.* To purchase or otherwise acquire a certain mining sett or mineral property situated in the parish of Michael, Isle of Man, together with the machinery, plant, and other effects connected therewith, and any other mineral property. To work and develope all such mines, and to carry on and conduct the business of a mining and smelting company, and dispose and sell of ores and other minerals, and generally to carry on the business of a mining company in all branches. The subscribers (who take one share each) are—R. Rowe, Douglas, M.E.; O. Webb, Stony Stratford, gentleman; J. Y. Watson, 1, St. Michael's-alley, mineowner; J. Thorne, 85, Gracechurch-street, merchant; C. B. Parry, Gracechurch Buildings, mining agent; J. Macfarlane, Gresham Buildings, merchant; N. F. Watson, 1, St. Michael's-alley, sharedealer. The number of directors must not exceed five or be less than three. The first are Messrs. Webb, Watson, Thorne, Macfarlane, and R. M. Longmore.

The Tuthill Limestone Company (Limited).—Capital 11,000*l.*, in shares 50*l.* To carry on the business of quarry owners, lime burners, brickmakers in Durham. The subscribers are—W. T. Hall, Fence Houses, 60; E. J. Forster, 51, Victoria-street, 1; W. B. Hawkins, 39, Lombard-street, 1; R. F. Matthews, Seaton Carew, 45; R. Forster, South Hetton, 10; J. Tinb, Coxhoe, 10; W. O. Wood, Coxhoe, 10.

The Endegram Tea Company (Limited).—Capital 40,000*l.*, in shares of 10*l.* To carry on a planter's business in Caehar, East Indies. The subscribers (who take one share each) are—E. Drummond, 13, St. James's-place; O. Heel, Glasgow; J. Steel, Glasgow; J. W. Lowe, 9, St. James's-square; W. Thomson, Woolton; A. Yule, 93, Bishopsgate-street; J. Gray, 4, Dowgate-hill.

John Moir and Son (Limited).—Capital 150,000*l.*, in shares of 10*l.* To acquire and carry on an established business of preserved meats and other articles of food. The subscribers are—W. M. W. Hewett, 5, St. James's-place, 50; C. Smith, Upper Galton Park, 50; R. Milburn, Beckenham, 50; W. C. Gray, St. Mary Cray, 25; S. W. Dunn, Foretsgate, 5; D. Calder, 99, Church-road, 10; J. Falkner, Finsbury Park, 10.

The High Gosforth Park Company (Limited). — Capital 100,000*l.*, in shares of 50*l.* To carry on a land company's business in Northumberland. The subscribers (who take one share each) are—J. B. Cookson, Morpeth; J. C. Straker, Corbridge; C. Perkins, Newcastle-on-Tyne; F. Scott, Newcastle-on-Tyne; J. R. Cowen, Blaydon-on-Tyne; N. Dunn, Nedderton; J. T. Sayer, Newcastle-on-Tyne.

The Queen's-road Hydropathic Company (Limited).—Capital 10,000*l.*, in shares of 10*l.* To carry on a hydropathic establishment at Ilkley, Yorks. The subscribers (who take five shares each) are—W. Hirst, Ilkley; W. M. Spence, Weston; W. M. Nelson, Leeds; J. Rhodes, Ilkley; A. S. Spence, Weston; C. E. Spence, Weston; A. Davy, Ilkley.

The Commercial Plate Glass Insurance Company (Limited).—Capital 10,000*l.*, in shares of 10*l.* To carry on an insurance business in connection with glass, &c. The subscribers (who take one share each) are—A. Prosser, Sunderland; W. Brockhill, Sunderland; J. Smith, Sunderland; W. A. Priestly, Sunderland; J. Priestly, Sunderland; R. P. Kietley, East Boldon; E. Couchman, Newcastle-on-Tyne.

The San Vicente Freehol dLead and Zinc Mining Company (Limited).—Capital 30,000*l.*, in shares of 1*l.* To carry into effect an agreement, made between J. Ward and J. C. Bowser, for the purchase of certain mineral properties at Batago, in the province of Santander, Spain, together with all machinery, plant, &c. To work, explore, develope, and maintain the mines, mineral properties, and works of the company, and to conduct the business of raising, working, mining, and selling lead and other ores, metals, and minerals in all its branches, and to carry on all smelting and manufacturing operations connected with lead mining. The subscribers (who take one share each) are—J. C. Bowser, Clapham, merchant; W. T. Allen, 67, Upper Thames-street, printer; J. Ward, 184, Palmerston Buildings, mine owner; J. W. Ward, Rosherville, agent; C. Wright, 61, Gresham House, mining agent; A. W. Kerly, 14, Great Winchester-street, solicitor; J. Wright, St. Michael's House, M.E. The first directors are Messrs. Bowser, J. W. Ward, J. N. Flint, and H. Noel, their number must not exceed seven, or be less than three.

The City of London and Metropolitan Tramways Company (Limited).—Capital 50,000*l.*, in shares of 5*l.* To construct, maintain, and work tramways. The subscribers (who take one share each) are—J. S. Partington, 5, Charlotte-street; E. W. Henry, 1, Queen Victoria-street; C. H. Ommaney, 3, Great Winchester-street; S. Wade, 46, Lydford-road; S. L. Colman, Birmingham; J. L. Gill, 21, Great Winchester-street; W. T. Taylor, 26, Grange-gardens.

Las-Caldas Freehold Malachite Copper Mining Company (Limited).—Capital 25,000*l.*, in shares of 1*l.* To carry out an agreement made between J. Ward and J. C. Bowser, for the purchase of a certain mineral property situated in the province of Santander, Spain; to work, explore, develope, and maintain the mines, mineral properties, and works of the company, and to deal in and dispose of the ores and minerals, and generally to carry on all operations connected with a mining company. The subscribers (who take one share each) are J. C. Bowser, 65, Chesham-road, merchant; W. T. Allen, 67, Upper Thames-street, printer; J. Ward, 184, Palmerston Buildings, mine owner; J. W. Ward, Rosherville, agent; C. Wright, 61, Gresham House, mining agent; A. W. Kerly, 14, Great Winchester-street; J. Wright, St. Michael's House. The first directors are Messrs. Bowser, J. W. Ward, Flint and Noel.

Gas and Air-Engines.—In his improvements in engines worked by gas or air Mr. C. G Beechey, of Nottingham, makes use of the air or gases in a compresser, from which it is conveyed into a receiver, preferably a jacket round the combustion end of the main cylinder, in which it is warmed by the surplus or commonly called waste heat previous to being admitted into the explosion cylinder, thereby partially expanding the air previous to explosion, and so gaining power upon the principle of the hot air engine. On the end or side of the explosion cylinder he places a slide valve (or its equivalent) which admits the explosive gases from the receiver into the explosion cylinder, and also to communicate the explosive gases in the explosion cylinder with the flame which fires them. On the back of this slide valve is a plate which holds it up to its face; in the centre of this back plate is a small chamber, and in this chamber is placed a burner, which burner is supplied with compressed gas and air taken either from the above-mentioned receiver or from an independent pump. This burner may also be supplied with compressed gas only. In order to govern the engine he automatically closes the exhaust valve at any percentage of the return stroke of the piston by means of a governor, thereby compressing more or less of the waste products, making more or less room for the explosive mixture; hence, more or less explosive gases will enter the explosion cylinder and the strength of each explosion consequently regulated.

EUREKA (NEVADA) MINING DISTRICT.

The remarks on the operations being conducted in the above district have been suspended during the last two weeks, as the presidential election, only concluded on Nov. 3, occupied the minds of most men there to the exclusion of personal business. The real mining work, however, has been proceeding without any serious interruption, and the reports of the various associations interested therein continue most favourable.

In the Eureka Consolidated Mine the new shaft had been sunk to a total depth of 591 ft., while the usual full supply for the two furnaces was being obtained from the old workings.

The Richmond Company's mines were working steadily, and their furnaces were in full blast, with a large supply from their own mines and good quantities of customs ore. In the Albion Mine the shaft had gone down to 100 ft., and another 75 ft. had been ordered. A drift was commenced to strike the ore north of the line dividing the ground from the neighbouring Richmond Mine. At the south of the mineral belt several mines are working busily. Prominent among these is the Dunderberg, where ore raising is going on in weekly increasing quantities.

A gentleman who has just returned from Eureka, and who while there fully inspected all these mines, speaks most highly of the manner in which the Dunderberg Mine is being worked, and of the systematic as well as economic organization of the Ruby Dunderberg Company's operations. This company's furnaces are being put into first-class order, and are expected to start work at the end of the month.

The Connolly Mine was not working, but was expected shortly to commence operations. At the California Mine, closely contiguous to the Connolly, good buildings have been recently erected, with the view of enabling work to be continuously carried on, and it was thought that the prospects of pay ore were most favourable.

The Mountain Bay and Pioneer Mines were being worked, and it was said that a New York company was negociating for some mining property in this district. Up in Secret Canyon the Geddes and the Bertrand Mines were being worked by a small party, and up this canyon a large amount of winter work is about to be done.

Turning to the north again the Williamsburg was contributing its usual steady returns, and this mine only requires development to render it one of the largest and most productive mines in the country. It adjoins the Ruby Company's Bullwhacker Mine, and the gangue of its ore is most useful for smelting purposes.

From White Pine district we learn that the tunnel in the Eberhardt and Aurora is completed. The length is 6200 ft. This undertaking has occupied a period of fully four years. The work has been prosecuted in a most able manner, and the shareholders may now look for a prompt reward for their large outlay and their long tried patience.

We regret that the above could not be inserted in our last. We have since received the following:—

Our advices from this mining centre during the past week have been replete with interest, and cannot fail to be of the greatest value to those who have followed the fortunes of that remarkable district. We would first draw attention to the following brief record of the history of the foremost mine there—the Eureka Consolidated. An American company started in 1876 with a first and last assessment capital of $10,000 ($2 per share). Up to and including Oct. 22 last $4,405,000 had been disbursed in dividends, of which the heaviest were in 1878, when 18 times the original capital was paid to the shareholders. The dividends declared this year amount to $380,000. The stock of this company ($2 paid) was being bought extensively in New York, where the last price was $17 to $17½. Of the Richmond Company's operations there is nothing fresh to note, but both at the mines and reduction works all was running well and favourably. Next in position come the Ruby and Dunderberg Company's mines and works. At the former work was as usual going on steadily under the best of management, and the weekly output will show a big increase when the 600 ft. level has been drifted under the ore body in the Dunderberg Mine. This mine is looking remarkably well, and it is said a nice body of ore is exposed on the 500 ft. level making down very strong, and available when the 600 ft. level gets beneath it. The ore is being piled up at the company's furnaces, which were nearly completed relining, and when dry would be started up. The ore was said to assay nearly $100 per ton. The necessary coal had been contracted for, and was to be delivered on Nov. 20.

This commencement of work at the Ruby furnaces marks a new era in the history of the Eureka district. Until within the last few months the Richmond furnaces alone were available for the sale of ores by the smaller mines, and when the furnaces of the Eureka Consolidated Company were opened for these customs ores it was thought that the competition would be keener. Both companies, however, resolved not to enter into competition; and, as both had plenty of their own ore, it naturally resulted that the price allowed on the ore was not remarkably liberal to the outside miner. This ore will now be largely offered to the Ruby furnaces, and if the miners are wise they will assist these latter as much as possible to keep open a third source of sale. These furnaces can afford a better price than either of their neighbours, as it will doubtless be their best policy not to press the reduction of their own ores until the Ruby Mines are more extensively opened out. The furnaces are capable of smelting over 100 tons of ore per day, and they are under the charge of a gentleman who fully understands his work in every detail.

The Williamsburg Mine is being worked very successfully. Six men are employed under Mr. Robert Kermeen (brother of the Ruby Mines manager), and the whim is busy at work raising ore to be sent to the Ruby furnaces. The shaft of the Williamsburg is now down 230 ft., and at that level a drift is run west under the old workings nearly all in ore, which assays from $6 or $18 per ton of silver and from 45 per cent. to 63 per cent. of lead. Of $12 to $15 ore there was about 60 tons on the dump, and occasionally rich deposits were struck. The supply chambers appeared inexhaustible. In the El Dorado No. 2 mine, worked by Mr. M. H. Joseph, a rich vein of ore was struck in the bottom of the shaft, which was said to assay fully $100, and was expected to lead to a large ore body. The Silver Connor Mine was being actively and cleverly managed. The shaft has been completed to 200 ft., and heavily timbered. The mine output has paid all expenses of this as well as new machinery and hoisting works. Altogether the winter prospects of the town and district of Eureka were never brighter, and the reports cannot fail to bring fresh capital to develope other mines and help to discover new ones.

Nova Scotia.—The following on the alluvial gold in Nova Scotia, by Mr. Edwin Gilpin, jun., F.G.S., may be of interest:—"Alluvial gold mining has not been carried on in Nova Scotia in any degree commensurate with the value of the auriferous deposits which are in a greater or less degree known to exist, and which in all probability occur to a much larger extent than is generally supposed. An impression has arisen that the greater part of the gold districts of Nova Scotia present nothing but rocky, denuded areas, without any, or at least very small, drift deposits. The contrary is indeed the case in some districts, and numerous wide-spread surfaces exist where alluvial gold mining cannot fail to be pursued with great profit if sufficient capital is embarked in the enterprise. A moment's reflection will satisfy the most incredulous that where rich gold-bearing lodes are exposed near the surface, in the valleys adjacent to such exposures, or in crevices in the rocky surfaces, the gold from the denuded lodes must have accumulated from its gravity. When, however, the lodes occur at the summit of a hill, or on its slope, much of the liberated gold will be found on the bed rock and in the crevices, or in the lowest stratum of drift in the valley below, whether occupied by a lake, swamp, or by drift. Tangier, Oldham, Sherbrooke, Waverley, Renfrew, and many other places in Nova Scotia present all the conditions for alluvial diggings, both in the form of old channels and their reworked condition."

PROVINCIAL STOCK AND SHARE MARKETS.

Cornish Mine Share Market.—Messrs. Abbott and Wickett, stock and share brokers, Redruth (Dec. 2), write:—The market has been steady during the past week, and in some instances prices have improved. To-day there has been a desire to sell, and prices have given way. Quotations annexed:—Blue Hills, 3⅞ to 4; Carn Brea, 100 to 102; Cook's Kitchen, 10¼ to 10½; Dolcoath, 56¾ to 57¾; East Pool, 35¾ to 36⅛; Mellanear, 5 to 5¼; New Cook's Kitchen, 6½ to 7; North Busy, 2½ to 2⅝; Pedn-an-drea, 1¾ to 1⅞; Pendarves United, 9½ to 10½; Santa Gertrude, 175 to 180; South Condurrow, 10¾ to 11¼; South Crofty, 10 to 11; South Frances, 10¾ to 11; Tincroft, 21 to 21½; West Basset, 15¼ to 15¾; West Peevor, 16¼ to 16¾; West Frances, 11 to 12; West Tolgus, 47 to 50; West Seton, 17 to 19; Wheal Agar, 6 to 6¼; Wheal Basset, 5½ to 6; Wheal Grenville, 10¾ to 11; Wheal Kitty, 4½ to 4¾; Wheal Peevor, 28½ to 29; Wheal Prussia, 1¾ to 2; Wheal Uny, 4¼ to 4⅛.

— Mr. S. J. Davey, mine sharedealer, Redruth (Dec. 2), writes:—A good business has been done in our market this week in Carn Brea, Dolcoath, East Pool, Tincroft, Wheal Uny, North Busy, and Wheal Grenville shares, and prices of them further advanced. Other shares have been less dealt in. To-day's market is easier, and there is not much doing, owing partly to dealers being busy with the settling. The following are to-days prices:—Blue Hills, 3¾ to 4; Carn Brea, 100 to 105; Cook's Kitchen, 10¼ to 10¾; Dolcoath, 56½ to 57½; East Pool, 35½ to 36; Mellanear, 4¾ to 5¼; New Cook's Kitchen, 6¾ to 7⅛; North Busy, 2⅝ to 2¾; North Penstruthal, 1⅝ to 2; Pendarves United, 9¼ to 10½; Penhalls, 1¾ to 2; Pedn-an-drea, 1¾ to 2; South Condurrow, 10¾ to 11¼; South Crofty, 10 to 11; South Frances, 10½ to 11; Tincroft, 21 to 21½; West Basset, 15⅛ to 15¾; West Frances, 11¼ to 11¾; West Kitty, 2¾ to 2¾; West Peevor, 16½ to 17; West Poldice, 3¾ to 4¼; West Tolgus, 47 to 49; West Seton, 17 to 19; Wheal Agar, 6 to 6¼; Wheal Basset, 5½ to 5¾; Wheal Comford, 3¾ to 4¼; Wheal Grenville, 10½ to 11; Wheal Jane, ⅝ to ⅞; Wheal Peevor, 28 to 29; Wheal Kitty, 4½ to 5; Wheal Prussia, 1¾ to 2; Wheal Sisters, 1¾ to 2; Wheal Uny, 4¼ to 4½.

— Mr. J. H. Reynolds, stock and share broker, Redruth (Dec. 2), writes:—During the week a good business has been transacted in all the leading shares, more particularly in Carn Brea, Dolcoath, Tincroft, and Wheal Grenville at an advance, but close rather easier, owing to realisations for the settling. The following are the closing quotations:—Blue Hills, 3¾ to 4; Carn Brea, 101 to 103; Cook's Kitchen, 10¾ to 11¼; Dolcoath, 56½ to 57; East Caradon, 2 to 2⅛; East Pool, 35½ to 36; Gunnislake (Clitters), 3½ to 4; Herodsfoot, 1 to 1⅛; Levant, 4 to 6; Marke Valley, 2 to 2⅛; Mellanear, 5 to 5½; New Cook's Kitchen, 6½ to 7; North Busy, 2⅝ to 2⅞; North Herodsfoot, 10s. to 15s.; North Levant, 5 to 6; North Penstruthal, 2 to 2⅛; Pedn-an-drea, 1¾ to 2; Pendarves United, 9½ to 10½; Phœnix, 2¾ to 3; Penhalls, 2 to 2⅛; South Caradon, 60 to 65; South Condurrow, 11 to 11¼; South Crofty, 10½ to 11; South Frances, 10½ to 11; Tincroft, 20½ to 21½; West Basset, 15 to 15½; West Chiverton, 1¾ to 1⅞; West Frances, 11½ to 12; West Kitty, 2 to 2⅛; West Peevor, 16 to 16½; West Poldice, 4 to 4½; West Seton, 18 to 20; West Tolgus, 50 to 55; Wheal Agar, 6 to 6¼; Wheal Basset, 5¾ to 6; Wheal Crebor, 4¾ to 5¼; Wheal Comford, 3½ to 3¾; Wheal Grenville, 11 to 11¼; Wheal Jane, ⅝ to ¾; Wheal Jewell, ½ to ¾; Wheal Kitty, 4½ to 4⅝; Wheal Peevor, 28½ to 29; Wheal Prussia, 1½ to 2; Wheal Uny, 4¼ to 4½.

— Mr. John Carter, mine sharedealer, Camborne (Dec. 2), writes:—The market has been active during the week, and prices in some shares rapidly advanced. Carn Brea shares improved to 105, buyers, and Tincroft reached 21¾. Dolcoath shares improved to 58¾, and East Pool to 36. Uny shares advanced to 4*l.* 8s. 9d., buyers; West Poldice, to 4*l.*, buyers; and Wheal Grenville to 11*l.* To-day the settling chiefly occupies attention, and prices have become slightly weaker. There is no change in the tin standards. Closing quotations subjoined:—Blue Hills, 3½ to 4; East Botallack, 1⅜ to 1⅝; Carn Brea, 100 to 102; Cook's Kitchen, 10¼ to 10¾; Dolcoath, 56¾ to 57¼; East Caradon, 1⅞ to 2⅛; East Pool, 35½ to 36; Mellanear, 4½ to 5; New Cook's Kitchen, 6½ to 7; North Busy, 2½ to 2¾; Pendarves United, 9¾ to 10½; Penhalls, 1¾ to 2; Pedn an-drea, 1¾ to 1⅞; Santa Gertrude, 177½ to 180; South Caradon, 60 to 65; South Condurrow, 11 to 11¾; South Crofty, 10¾ to 11; South Frances, 10¾ to 10¾; Tincroft, 20 to 21; West Basset, 15½ to 16; West Caradon, 2 to 2⅛; West Chiverton, ⅞ to 1; West Mary Ann, 1 to 1⅛; West Phœnix, 1⅜ to 1½; West Crebor, ⅝ to ¾; West Tolgus, 49 to 50; Wheal Agar, 6¼ to 6½; Wheal Basset, 5½ to 6; Wheal Crebor, 4¾ to 5; Wheal Fortesue, 1¼ to 2; Wheal Grenville, 10 to 10¼; Wheal Kitty, 4¾ to 5; Wheal Hony and Trelawny, 2¼ to 2½; Wheal Peevor, 28½ to 29; Wheal Uny, 4⅛ to 4¾.

Manchester.—Messrs. Joseph R. and W. P. Baines, sharebrokers, 13, Queen's Chambers, Market-street (Dec. 2), write:—Although the money market has shown signs of strengthening, quotations during the week have had, with few exceptions, a decidedly upward tendency, and as the hardening of money may by some be supposed to foreshadow a greater demand for capital for commercial undertakings, it is reasonable to suppose that a turn towards prosperity in the staple trades of the country is likely to ensue with the turn of the year, and if that proves correct higher prices may be looked for early in January, if not before, in anticipation. Political affairs abroad seem to warrant the hope of amicable relations prevailing, and in the absence of any untoward circumstances there will be nothing to stay the upward movement when it sets in. Speculative stocks have not been affected in any marked degree by the fear of dearer money, but, on the other hand, may show distinct rise on the face of it. A fair amount of general business has been done, but there has been no such buying, notwithstanding the fact of seemingly all-round strengthening of values.

Banks, though tone has been in favour of higher prices, have not produced much business. What has been done, however, has been at prices quite up to, and in some bases in advance of, figures ruling a week ago. The only instance of decline is Liverpool Commercial, which are quoted ¾ lower, whilst National Provincial now are ½, Manchester and Salford, ¼, Parrs, ¼, and Southport and West Lancashire Bank, ½ higher.

Insurance.—Business to an average amount is reported, the chief instance being Lancashire, which have been done several times at advancing rates. Boiler Insurance and Steam Power are marked as done at a slight advance on recent figures, but only a solitary transaction. The alterations show a marked strength in quotations, there being no instances of decline, whilst the advances are very numerous, and in some cases substantial.—Higher: British and Foreign Marine, ⅝; Royal Liverpool, ⅝; Commercial Union, ½; Liverpool and London and Globe, ⅝; and several others ½ to ¾ better.

Coal, Iron, &c., and Mining.—Though no extraordinary number of transactions are recorded figures on dealings have been maintained, and some higher prices obtained. The changes show prices generally distinctly higher, but not many of any great moment, and where lower values have to be noted, the instances of which are very few, the declines are slight. The following are higher:—Earle's Shipbuilding, 1½; Sharp, Stewart, and Co., 1; Tharsis Sulphur, &c., ⅛; Palmer's Shipbuilding, ¼; Bilbao Iron, Ebbw Vale, Llynvi Tondu, West Cumberland, Staveley, A, and Sheepbridge, ¼ each.—Lower: Pelsall, ¼; A. Knowles, ¼; Chillington Iron, Bolckow (12*l.* paid), and Tees Side Iron and Engine, ½ each.

Cotton Spinning and Manufacturing.—The tone of the market continues steady, but not much business is in progress, the same influence being apparent as we noticed last week—the unwillingness of holders to sell unless at an advance, and the fact of buyers not yet considering themselves justified in giving advanced prices demanded. At buyers' quotations, however, no doubt large purchases would be made, and should the opinion become held that a better state of the cotton taade was to be expected in the near future prices would doubtless show higher quickly; as at present figures, with a prospect of fair trade, these securities present a profitable field for investment.

Telegraphs.—A very decided movement has occurred in Anglo, and business has been brisk in them during the later days of the week at much improved rates. The stir has also been felt in others, but not to the same extent. On the week Anglo Ordinary are 3½; ditto Deferred, 4; and ditto Preference, 2½; West India and Panama, ⅝; and Direct United States Cable, ¼ higher; Western and Brazilian, however, have receded 7/16.——Canals, with the exception of a rise in Rochdale of ½, with one or two transactions at the better figures, do not show much movement.——Corporation Stock unchanged.——Miscellaneous little doing, and changes ¼ advance in Manchester Carriage, A, whilst Rylands and Southport Winter Gardens are ¼ each lower.

Railways.—The stringency of money, and consequent higher rates for bills, with large withdrawals of money, would have indicated a severe depression, but although this affected some stocks for the moment there has since been a decided rise in prices. The goods lines have all been in favour, and record a distinct advance. Brighton, A's, as of late, have fluctuated, but much better prices are recorded to-day. The increasing of the rates for continuation in North British produced a depressing influence, and this was also followed by yesterday's bad traffic returns, so that, on the whole, lower quotations rule for this stock. Chatham and Sheffield Ordinary and Deferred are also easier from same causes, coupled with some heavy selling. The Great Western of Canada traffic,

600 increase, had an unfavourable effect on Canadians; and although the Grand Trunk only return 3042 increase, there has been quite a change come over this market, and a good advance has been established, all issues closing about their best. Americans after being good on higher New York prices, and down again on the shortness of gold, have recovered somewhat to-day.

HULL.—Mr. W. FOWLER SUTTON, stock and share broker, St. Mary's Chambers (Dec. 2), writes:—The arrangement of the account being completed without difficulty, railway stocks have developed considerable strength, more especially Berthas and London, which were in short supply. Prices are very hardy, and only Chathams display any weakness worth naming. The comparatively near approach of the dividends will, no doubt, preclude any serious decline in prices, especially when it is borne in mind that every company has an increased revenue this half-year, as compared with 1879, ranging from the modest increase of 30,007*l.*, in the case of the Great Northern to the really magnificent one of over 300,000*l.* in that of the North-Eastern. There are yet four weeks more to complete the full half-year's traffic receipts, which in some cases will probably further materially add to the increase. Trunk stocks have been firm all the week, and slowly but surely advancing. On a slight relapse this morning on the traffic, large buying orders came forward, and the prices of Ordinary stock and Third Preference quickly advanced from 24 and 47 to 25 and 48 respectively, while the First Preference went to 100 and the Seconds to 90. Rather more than 12 months ago Ordinary stock was worth only 7½, and the Preferences 14, 29, and 50 respectively. Canadas quiet, and after touching 13¾ they have receded to 15½. The American market has been irregular, owing to some tightness in the New York money market; but as this is expected to be temporary, we may look for an early recovery. In the foreign markets, Turks have absorbed attention, and the advance in the various issues has been important. Whether it will be sustained is greatly to be questioned, but the buying, it is said, has been influential. Local stocks firm, especially Hull Banks and Earles. Quotations are—Hull Banks, 12; London and Yorkshire Bank, 20s. 6d.; Yorkshire Bank, 22; Hull Docks, 83½; Hull Tramways, 9½; Earle's Shipbuilding, 20½.

The prospectus of the Hull, Barnsley, and West Riding Junction Railway and Dock Company appears in another column of to-day's Journal, and is considered one of the most genuine and important enterprises introduced for many years.

SCOTCH MINING AND INDUSTRIAL COMPANIES' SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, sharebroker and ironbroker (Dec. 2), writes:—During the past week markets have been quiet, owing to the fortnightly settlement intervening. The rates of continuation then current are noted below, and show the supply of shares was generally smaller, consequently speculators were enabled to continue their bargains on more advantageous terms. Trade also appears in a satisfactory state, and generally improving.

In shares of coal, iron, and steel companies the movements for the week comprise advances of 10s. per share on Clyde Coal, 5s. on Ebbw Vale, and 2s. on Omoa and Cleland; but Monkland (Preference) are reduced 3s. 9d.; Monkland, 3s. 6d.; Cairntable, 2s. 6d.; Benhar Coal, 2s.; Chillington Iron, 1s. 3d.; and Marbella, 6d. In the Scotch pig iron market the prices of warrants has declined from 52s. 10½d. to 51s. 8d., owing to the conflicting advices regarding the continuance of the American demand. The home trade, however, appears in a satisfactory state; and although during the winter the tendency of the stocks is to increase, it is possible the bear account, which is enormous, will keep prices about their present level, although no important rise may take place till spring. Benhar Coal shares declined from 23s. 3d. to 19s., but are now firmer at 20s. to 20s. 6d. The Steel Company of Canada has announced a profit of 12,000*l.* on last year. Andrew Knowles and Sons are at 11¼ dis.; Bagworth Colliery, 67s. 6d.; Bilbao Iron, 28; Bilson and Crump Meadow, 82s. 6d.; Bolckow, Vaughan, A, 23¾; ditto (12*l.* paid), 95s. prem.; ditto (pref.), 20½; Bawesfield Iron, 90; Cardiff and Swansea, 40s.; Chapel House Colliery, 25s.; Chillington Iron, 80s. to 82s. 6d. Clyde Coal touched 89s., but are now easier at 85s. to 86s.; Darlington Iron, 14¾ dis.; Ebbw Vale, 10¼ to 10½; Great Western Colliery, 55s.; Henry Briggs, A, 9¾ to 10¾; Hutton Henry Coal, 100; John Bagnall and Sons, 22s. 6d. to 27s. 6d.; Llynvi and Tondu, 6¼ to 6⅝; Lofthouse Colliery, 73s. 9d.; Marbella, 76s. to 78s.; Monkland Iron, 54s. to 56s.; ditto (pref.), 5⅞ to 6⅛; Munta's Metal, 13¼; Mersey Steel, 55s. dis.; New Sharleston (pref.), 90s.; Newmarket Colliery, 5; Newport Abercarn, 6½; Oakham Colliery (pref.), 5s.; Omoa and Cleland, 29s. to 31s.; Parkgate Iron, 42s. 6d. prem; Pelsall Coal and Iron, 11½ to 12½; Rhymney, 24; Sandwell Park Colliery, 17; Sheepbridge, 16⅝ dis.; Shotts Iron, 78; Silkstone and Dodworth, 80s.; South Wales Colliery, 40s.; Staveley, A, 18¾ prem.; ditto, C, 79; Steel Company of Scotland, 11¼ to 11⅜; Teesbridge, 75; Teeside Iron and Engine, 42s. 9d.; Thorp's Gawber Hall, 20s.; Tredegar, A, 22; West Cumberland, 11⅝ dis.; and Wigan and Whiston, 75.

In shares of foreign copper and lead companies prices have also improved. Tharsis have advanced 12s 6d. per share; Cape and Tharsis (new), each 10s.; Panulcillo and Rio Tinto, each 5s.; Canadian and York Peninsula (pref.), each 2s. 6d.; and Huntington, 1s. 6d. The Cape Company have declared a dividend of 1*l.* per share, payable December 24. Rio Tinto 8 per cent. bonds have now got up to about par. Tharsis improved from 33*l.* 13s. 9d. to 34*l.* 10s., and are now about 34*l.* 5s. Alamillos are 30s.; Copiapo, 11½; English and Australian, 32s. 6d.; Huntington, 62s. to 64s.; New Quebrada, 6¼; Pierrefitte (ordinary), 19s. 6d.; Vimeberg, 30s. to 40s.; Yorke Peninsula, 5s. to 7s. 6d.; and ditto (pref.), 17s. 6d. to 22s. 6d.

In shares of home mines prices are generally higher, especially tin shares owing to the upward tendency in the market for that metal. Glasgow Caradons have been done at 25s., which shows a slight advance. Assheton are at 15s.; Bedford United, 20s.; Blue Hills, 75s.; Bwlch United, 42s. 6d.; Berehaven, 3s. 9d.; Carn Brea, 107; Cook's Kitchen, 11; D'Eresby Mountain, 46; Devon Consols, 13¼; Devon United, 45s.; Dolcoath, 57½; Drakewalls, 50s.; East Cliverton, 26s.; East Longrake, 20s.; East Caradon, 42s. 6d.; East Buller, 20s.; Fortescue, 20s. to 30s.; Grogwinion, 6ls. 3d.; Indian Queen, 41s. 3d.; Killaloe Slate, 9s. 9d.; Kirk Michael, 20s.; Lady Bertha, 17s. 6d.; Leadhills, 50s. to 55s.; Mid-Devon Copper, 5s. 6d.; Mining of Ireland, 60s.; Mount Carbis, 35s. to 45s.; New Caradon, 12s. 6d.; New Wye Valley, 25s.; North Busy, 55s.; New Kitty, 25s.; North Penstruthal, 35s. to 40s.; Pant-y-Mwyn, 32s. 6d.; Parka Mines, 41s. 3d.; Pandora, 15s. to 20s.; Red Rock, 40s.; Roman Gravels, 9½; South Frances, 11; South D'Eresby, 20s.; South Devon, 30s.; South Penstruthal, 12s. 6d.; South Crebor, 25s. to 35s.; St. Just United, 5; Tretoll, 20s.; Tin Hill, 28s.; Tincroft, 22; Tamar, 20s. to 25s.; West Caradon, 30s.; West Phœnix, 45s.; West Basset, 16; West Seton, 19; West Kitty, 45s. to 80s.; West Frances, 11¾; West Poldice, 60s. to 70s.; West Pateley, 20s. to 30s.; West Feevor, 17; Wheal Hony, 41s.; Wheal Crebor, 90s. to 95s.; Wheal Owles, 7; Wheal Jane, 10s. to 15s.; Wheal Coates, 27s. 6d.; Wheal Basset, 6; Wheal Grenville, 11; Wheal Jewell, 10s. to 15s.; Wicklow Copper, 7s. 6d. to 8s.; and Ystwith, 24s.

In shares of gold and silver mines, there has been more business doing, and prices are generally higher. Richmonds have advanced 7s. 6d., at 15¼ to 15½. This week's run is 850,000. Frontino announces a profit in September of 3340*l.*, although they have been a little short of water, but they have now secured extensive water rights. St. John del Rey has declared a dividend of 5 per cent. for last half-year. Flavillas and Last Chance enquired for. Almadas are 7s. 6d. to 10s.; Australasian Mines, 5s.; Callao Bis, 22s.; Cedar Creek, 2s.; Colorado, 52s. 6d.; Dieu Donne, 20s.; Devála, 50s.; Don Pedro, 13s. 9d.; Eberhardt, 50s.; Emma, 80s.; English Australian, 15s. to 17s. 6d.; Flagstaff, 36s. 3d.; Gold Coast, 7s. 6d. to 10s.; Indian Glenrock, 31s. 3d.; Javali, 5s. to 7s. 6d.; Kapanga, 15s. to 17s. 6d.; La Plata, 32s. 6d. to 35s.; Mysore, 12s. 6d. prem.; Nouveau, 21s. 3d.; Port Phillip, 9s. to 11s.; Pestarena (pref.), 20s. to 25s.; Ruby, 17; Rhodes Reef, 6s. 3d. prem.; Rio Grande, 40s. to 50s.; Rossa Grande, 3s. to 5s.; Santa Barbara, 35s.; Sierra Buttes, 22s. to 35s.; South-East Wynaad, 27s. 6d.; South Indian, 40s.; Tecoma, 5s. to 10s.; and Victoria, 5s. to 10s.

In shares of oil companies prices are generally firm. Dalmeny have advanced 5s. per share. Most shares are now quoted ex div., the dates and amount payable being:—21s. 3d. on Broxburn on Dec. 4; 6s. 6d. on Uphall on Dec. 19; 2s. on Oakbank on Dec. 10, and 6s. 9¼d. on Young's Paraffin on Dec. 10. Young's Paraffin, after being 13¾ to 13⅞ cum div., have declined to 12⅝ ex div. Flintshire Oil, 43 dis.; Runcorn Soap and Alkali, 30s. dis.

In shares of miscellaneous companies there is no particular alteration to notice. An injunction has been granted restraining the directors of the Neuchatel Asphalte Company from reducing the company's capital as previously agreed by a majority of shareholders. Cheshire Salt are at 8; Earle's Shipbuilding, 14 dis.; Palmer's Shipbuilding, B, 7 dis.; United Asbestos, 5s. to 10s. prem.; and Zoedone, 33s. 9d. to 35s. Prices of wagon companies shares are: Bristol and South Wales, 5½; Birmingham, 12½; Gloucester, 65; Metropolitan, 65s. prem.; Midland, 10½; Railway Carriage, 90s.; Starbuck, 10; Scottish, 8½ to 9; Swansea, 50s.; and United States Rolling Stock, 18¾ to 19¼. Prices of chemical companies are—Goux, 20s. 6d.; Langdale's, 55s. to 60s.; Lawes', 5⅝ to 5⅞; and Newcastle, 60s. to 70s.

SILVER PEAK MINING COMPANY (Limited).—An English company has been formed under this name to acquire and develope the property in Colorado of the Mineral Point Tunnel Company of New York. This property has frequently been favourably referred to in this article, as well as the attractive project for its development—by means of a tunnel which is being cut directly through the mountain at a surface depth varying from 200 to over 1300 ft., and of a total length of about 7000 ft., and will cut upwards of 20 surface lodes, besides any "blind" or new lodes. The ore taken from the different lodes already cut has assayed up to 1400 ozs. of silver per ton. The great advantages to be attained by developing nearly 40 mines, at the depth at which the richest ores are generally found is this way at little more expense than it takes to one mine under the ordinary method of shaft sinking, do not require to be referred to particularly. The board of directors includes the chairman of the Frontino and Bolivia, as well as some of the directors of the Richmond Company. The capital is 250,000*l.*, in 1*l.* shares.

On contango day (Monday) the following were the rates of continuation current—Contangos: 2½d., 2d., 3d., 2d. on Canadian Copper; 2d., id., ½d., even on Clyde Coal; id., ½d. on Caradon; 1½d. on Caradon, new; 4d., 3d. on Glasgow Port Washington; 4d. on Huntington; 2d. on Kapanga; 4d., 3½d., 1½d. on Marbella; 3d., 4d. on Monkland Iron; 6d. on Pref.; 2½d. on Omoa; 3d. on Panulcillo; 4d. on Parys Copper; 6d. on Rio Tinto; 7d. on South Indian; 7½d. on Steel Company; 9d. on New; 1s. 6d. on Tharsis; 8d. on West Kitty; 1s., even, on Broxburn; 1s. 3d. on India Rubber.

Backwardations: even, 1⅛d., 2d., 3d., 2½d. on Benhar Coal: 1d. on Clyde Coal; 8d. on Uphall Oil; 6d. on Young's Paraffin. On comparing the making making-up prices fixed to-day for the undermentioned shares with those current at last settlement for the same shares, the variations thus shown to have taken place during the account are as follows:—Panulcillo have advanced 1*l.* 17s. 6d. per share; Rio Tinto, 1*l.* 10s. Richmond, Tharsis, and ditto (new) each 10s.; Clyde Coal, 7s.; Omoa and Cleland, 4s.; Glasgow Port Washington, 3s. 6d.; Canada Copper, Marbella, and Uphall Oil, each 2s. 6d.; Oakbank Oil, 2s.; India Rubber, 1s. 3d.; Benhar Coal, Glasgow Caradon, and Huntington each 1s. On the other hand, Steel Company of Scotland (new), have declined 3s. 9d. per share; Steel Company, 3s.; Young's Paraffin, 2s. 6d.; and Monkland (pref.), 1s. 3d. The remainder are unaltered—Broxburn Oil, Glasgow Caradon (new), and Monkland ordinary.

The following calculations show the yield per cent. on money invested at present prices in the shares named, based upon the last average yearly dividends being maintained:—Antrim Iron Ore, A, would yield 5¾ per cent.; ditto, B, 5⅞; Great Laxey Mine, 7¼; India Rubber Works, 5⅝; Liverpool Rubber, 7; Milner's Safe, 8⅝; Panulcillo Mine, 2; Phospho Guano, 2½; Runcorn Soap, 5⅝; Starbuck Wagon, 5⅛; Steel Company of Scotland, 6; and Tharsis Sulphur and Copper, 5.

EDINBURGH.—Messrs. THOMAS MILLER and SONS, stock and sharebrokers, Princes-street (Dec. 2) write:—Purchasers of railway ordinary stocks have been during the past month on a limited scale. Prices have drooped, and the prices at the last are rather heavy. Mining shares have generally improved. In Clyde Coal there has been a notable rise, the price having advanced from 83s. to 87s. 6d. The rise appears to be in some measure owing to repurchases to cover speculative sales. Arniston Coal have risen from 8 to 8½; Canadian Copper, from 32s. 6d. to 35s. 6d.; Omoa and Cleland, from 28s. to 29s.; Tharsis, from 33⅛ to 34¼. Benhar Coal have receded from 20s. to 19s.; Cairntable, from 6½ to 6⅛; Marbella, from 79s. to 77s. Since the foregoing was written Omoas have risen to 37s. Railway Preference and Guaranteed Stocks have advanced to higher prices. Debenture Stocks also are generally 1 to 2 per cent. higher, and the rise on most of those of the North British Company is even geater. The 4 per cent. Debenture Stock of that company has risen from 104¾ to 106; the 4½ per cent., from 111 to 115; the 4¼, from 106⅜ to 109; and the Edinburgh, Perth, and Dundee, B, 5 per cent., from 126 to 128. Canadian Stocks have again come into demand. Grand Trunk Ordinary has risen from 21 7/16 to 24 1/16: the First Preference, from 93½ to 99; the Second, from 83¾ to 89½; the Third, from 43⅞ to 47 9/16. Canadas have improved from 14⅝ to 15 7/16. There have been some considerable fluctuations in American railway shares and bonds, but at the last the differences between the present prices and those which ruled a month ago are not of much consequence. Bank stocks have been in demand, and a considerable rise in prices has taken place. Insurance shares have been in great favour as investments, and the last prices are in most cases the best. Colonial and American property shares have been in demand, at improved prices. American Mortgage of Scotland have advanced from 22s. 3d. to 23s. 3d.: Australasian Mortgage and Agency, from 40s. to 49s.; Colonial Investment and Agency of New Zealand, from 23s. 3d. to 24s. 3d.; Dundee Mortgage, from 68s. 6d. to 72s.; National Mortgage and Agency of New Zealand, from 28s. 9d. to 30s.; Scottish American Investment, from 73s. 6d. to 80s.; Scottish American Mortgage, from 60s. 6d. to 64s.; Scottish and New Zealand, from 27s. 6d. to 30s.; Scottish Trust and Loan of Ceylon, from 36s. to 39s.

IRISH MINING AND MISCELLANEOUS COMPANIES' SHARE MARKET.

DUBLIN, DEC 2.—There is absolutely nothing to report concerning the mine share market during the week; indeed, as there are neither buyers nor sellers it may be said to have no present existence, so that all that can be done is to hope for that brighter future when the mines and minerals of Ireland will receive the attention they deserve in consideration of the fact that they could, when the present state of anarchy is changed, be made to yield profit to the English and benefit to the Irish, upon which all might be congratulated. The truth is that business is just now very dull in spite of the efforts made to hide that fact, The Hibernian Bank dividend is announced this evening at the rate of 9 per cent. per annum (22s 6d. per share for the half year), with a surplus of 3441*l.* 15s. 2d., comparing with a similar rate for the two half-years previously, but with a somewhat larger balance (5064*l.*) for the corresponding period of last year. Tramway shares are fairly steady, Dublin Union readily fetching 10½, Central 11½, and Provincial 11¼. In others there is very little doing.

CORK.—Messrs. J. H. CARROLL and SONS, stock and share dealers, South Mall (Dec. 1), write:—Markets have been rather dull for the past week. Great Southerns have changed hands at 114 to 114½, and Midlands at 86¼ to 86⅝. Bandons unchanged, but Macrooms are enquired for at 6¼. National Banks are 66 to 66½, and Munsters 6⅞. Provincials dull at 60, and Hibernians firm at 45. Cork Steam Packets are 13½, and Lyons shares 5½ to 5¾. Daly's shares are steady at 3½, and Gas shares at 7½. Harbour Board Debent ires remain at 102¼.

Meetings of Public Companies.

DEVALA PROVIDENT GOLD MINING COMPANY.

The statutory general meeting of shareholders was held at the City Terminus Hotel, Cannon-street, on Monday,

Mr. H. SCHULTZ in the chair.

Mr. EDWARDS (the secretary) read the notice convening the meeting.

The CHAIRMAN said that although practical results could not be very well achieved in mining in the short time that was stipulated by law to elapse between the incorporation of a company and the holding of the first general meeting of shareholders, it was at least fair to expect a report of some progress when a company had been constituted for about three months. The directors had hoped to come before the shareholders at that meeting with some report from the property; but, unfortunately, they had to content themselves with announcing that they were able only about ten days ago to take possession of the property, in consequence of the inability of the vendors to comply with the conditions of the contract. The directors had, in the interests of the shareholders, assisted the vendors to obtain what was wanted—the mining rights; but when these documents arrived it was found that the mining rights were not those stipulated for. The board finding that for a considerable time to come they could not obtain the mining rights in their entirety as they were held out in the prospectus—they were, in fact, restricted—and under those circumstances they reconsidered the original contract, and in the end varied it, in accordance with the powers given them by the Articles of Association. By the present Government regulations the grant of mining rights was only given to the extent of 30 acres at one time in land upon which the Government claimed control. The Government would not, however, interfere with the rights of possession of the land, nor would they grant to outsiders the mining rights of the land; but they would not grant the company those rights for more than 30 acres at one time, and these restricted rights had been conveyed to them by the vendors. It would be conceded that 30 acres was a very large area for mining, and that it was amply sufficient for a most powerful company to work, and, therefore, they would not be impeded by being thus restricted. Moreover if, as they might all hope, auriferous rock was found in a paying quantity all over the area there was nothing to prevent them forming another company, and obtaining the Government grant for another 30 acres as they had done to this company, so that the restriction was only a nominal one. (Hear, hear.) However, in discussing the matter with the vendors it was clear that the company had to make some sort of a sacrifice. and it became the duty of the directors in their own interests as well as in those of the shareholders to retain the largest share of the purchase money that was practicable as a security for the eventual fulfilment of the entire contract. They had, therefore, taken possession of the property by taking off the mortgage and paying the vendors one-half of the purchase money agreed upon—10,000*l.* in cash and 5000*l.* in shares, which was to be increased to two-thirds—by the issue of 5000*l.* in shares more—upon the vendors obtaining from the Rajah of Wandour, who was the original proprietor of the land, the mining rights to which he laid claim. (Hear, hear.) The Government did not recognise the claim of the Rajah, having declared the land escheat in 1870. The directors felt that the company was amply secured by retaining this 5000*l.* in shares until the Rajah should settle with the vendors, and the remaining one-third would only be paid when the property was converted in its entirety into freehold land the property of the company. (Hear, hear.) It was impossible to forsee that the vendors were so little prepared to carry out their undertaking, and the directors had not lost a moment in concluding what they hoped the shareholders would consider a favourable arrangement, and in requesting Prof. Simons to prepare at once to start for the property, and commence mining operations, one of their number—Gen. Abbott—had consented to accompany Prof. Simons, and to take possession of the property until they could secure a permanent manager for the estate. (Hear, hear.) He (the Chairman) could not add anything to what the prospectus stated with regard to the value of the property; but he looked upon it that they had a very valuable estate, and he pointed to the daily accumulating circumstantial evidence from the surrounding properties of the great value of the gold-bearing districts of Devala. No doubt they would hear with pleasure what Prof. Symons had to say on the subject, for although he had not visited the property he had visited the district, and under his guidance they hoped to develope the resources of the property, and soon enter upon a prosperous career. (Applause.)

Prof. VAZIE SIMONS said he regretted very much indeed that he was not in a position to give them his own opinion as to the value of the property from personal inspection of it; but some time ago—a few weeks, in fact—he rode over it, and it was pointed out to him as being an exceedingly fine piece of land, with rich reefs running through it. (Hear, hear.) He was not paid to report upon it—(a laugh)—and, consequently, he merely rode over it, and took no notes. However, when the engineering of it was offered to him he wished to satisfy himself that there would be some chance of his making it a success, and, therefore, he took counsel of some of his friends whom he knew were well acquainted with the property. (Hear, hear.) One of them was Mr. Oliver Pegler, a gentleman in whose opinion he had very great faith. (Hear, hear.) Mr. Pegler told him that he had examined the property, that there was an exceedingly fine reef in it, and that he believed it to be the junction of one of the best reefs in the district. He thought that he (Prof. Simons) might take the engineering department without having the slightest fear of making it a success. (Hear, hear.) He was requested by the Chairman and directors to prepare himself to go out to the property, and he purposed starting on Saturday week, taking with him, or rather sending slightly in advance of him, a mining manager, who, judging from his testimonials, from his conversation, and from what he evidently knew not only of Bendigo but of various portions of Victoria, he (Prof. Simons) expected to find this manager to be the right man in the right place. (Hear, hear.) He seemed to be perfectly capable of prospecting for new reefs, putting down shafts, timbering, driving, pumping, erecting machinery, superintending the crushing and amalgamating machinery, and besides that taking full charge of the gold mining portion of the estate. (Hear, hear.) The company had he thought been rather fortunate in this choice—he hoped so. The manager was to be started on this Wednesday, but as he (Prof. Simons) proposed taking out the necessary tools and various appurtenances for commencing operations, together with the machinery for crushing, he thought it would be better for the mining manager to make his own choice, so that when he got out there he would know precisely the material he had to go to work with, and, therefore, it had been thought better for him to remain another week, as it would save time at the other end of the journey, and he would start on Wednesday week. (Hear, hear.) They would lose no time in getting to the estate and commencing operations, and in consequence of what his friend Mr. Oliver Pegler had told him he might say that he should go in most excellent spirits. (Hear, hear.) He trusted that when he appeared before the shareholders again, as he expected and hoped to be in about six months time, that they would all have occasion to be in as good spirits as he felt himself to be in at the present time. (Applause.) He would be happy to answer any questions; but he could only tell them that he had given the directors nearly all the information he had acquired up to that time; but he hoped to be wiser in the course of about five or six weeks. He would not fail to keep the directors *au fait* as to the proceedings at the property, so that the shareholders might not be hoping with that deferred hope which maketh the heart sick in money matters as well as in love affairs.

Mr. SMEDLEY asked what was the name of the manager who was going to take charge of the mining operations?——Prof. SIMONS said it was Mr. Murphy.

Mr. SMEDLEY also asked whether the property was not contiguous to that of the Devala-Moyar Company, and what was its position with regard to Rhodes's Reef?——Prof. SIMONS replied that their property adjoined that of the Devala-Moyar Company and the Needle Rock Mine, and it was not more than three or four miles from Rhodes's Reef in a straight line.

The CHAIRMAN remarked that his colleagues and himself were equally anxious with Prof. Simons to impart information to the shareholders, and they would not fail to keep them informed of all that was going on.

Mr. SHERIDAN proposed a vote of thanks to the Chairman and directors.

A SHAREHOLDER seconded the proposition, which was carried unanimously.

The CHAIRMAN briefly returned thanks, and the meeting then closed.

RIO GRANDE DO SUL (BRAZIL) GOLD MINING COMPANY.

The second half-yearly general meeting of shareholders was held at the offices, Finsbury Circus, on Wednesday,

Mr. B. D. KERSHAW in the chair.

Mr. J. A. MORGAN (the secretary and solicitor) read the notice calling the meeting, and the report and accounts were taken as read

The CHAIRMAN said the directors were sorry that the report did not contain all the telegrams received from the mines, but since the report was sent out three telegrams had been received. One was from Mr. Bankart, stating that the purchase of the property and of the mines had been completed; another stating that he had sent away 10 ozs. of gold to show that they had begun work; and the third was a telegram which had been received from the liquidators, stating that the conveyance of the property was in order, and everything done. Probably the shareholders had been somewhat surprised in the delay which had occurred in the receipt of the telegram, but there had been many difficulties to contend with. One thing which had delayed them was the weather. Although it had been stated that the climate of Brazil was such that there were few inundations, still a serious inundation had occurred, so much so that it stopped all traffic, and when the liquidators had sent out to the province of Rio Grande money to pay the Siza tax, and the Government had to send back a receipt to Rio de Janeiro, the state of the roads prevented the messenger getting back with the receipt. Then there was a delay in another way. The Government made a heavier claim than the manager, Mr. Bankart, thought they ought to pay; they wanted to include, besides the value of the ground, all the money which had been spent upon the mine by the former company; this was scarcely fair. If a man had a field worth 1000*l.*, and if he dug a hole at the expense of 100*l.*, and if the hole fell in they could not say the property was worth 2000*l.* Mr. Bankart went over and arranged the matter. He thought the company had now fairly started, and from the letters which had been received there was every reason to believe that everything would go on in a first-rate manner. All disputes about the title had been got over, and also disputes with the concessionaires, who were to settle with the liquidator. The machinery Mr. Bankart said was necessary for crushing 8 tons of quartz per day had been ordered of Messrs. Harvey, of Cornwall, who were going to make it for 730*l.* The directors had given instructions to Messrs. Harvey to get on with it as rapidly as possible, so as to get it to the mine as quickly as could be. The board had also arranged to send out the miners whom Mr. Bankart selected before he left England. The machinery which would be erected to begin with would crush 8 tons of quartz per day. In the prospectus which was issued the amount of gold to be found was stated to be very large—as much as 15 ozs. per ton. But if they took it at only 1½ oz. per ton, and if they crushed 8 tons per day that would yield 12 ozs., worth 40*l.*, per day, and for 300 working days in the year that would yield 12,000*l.* value of gold. Assuming half that to be profit—6000*l.*—it would pay a dividend of 10 per cent. upon the capital issued and paid up, so there would be a certain surplus left for dividends upon the deferred shares. Mr. Bankart had on the mine nearly all the machinery requisite for a large mine, which would be erected as it was required. They were going to dredge out the sand from the river bed, which was very valuable indeed. He thought there was no doubt of the company's success. In conclusion, the Chairman moved the reception and adoption of the report and accounts.

Mr. THOMAS BUSH seconded the resolution.

The CHAIRMAN, in reply to Mr. NEW, who said he thought the London expenses were rather heavy, said they included the salary of Mr. Bankart from last November, and also the payments to the solicitor and Mr. Pooley.

Mr. NEW asked whether there was sufficient capital to start the mine in good working order?——The CHAIRMAN said there was sufficient to start the mine in good working order, but when the directors got the results they hoped to obtain they would then issue further shares, and they would also get a quotation in the Stock Exchange, but they could not do that till they got further capital. The amount of money at the bankers at the present time was 2462*l.*

The resolution for the adoption of the report and accounts was put and carried.

Mr. P. EDINGER, the auditor, said he had gone carefully through the books, and found them exceedingly well and clearly kept.

On the motion of Mr. MARTINEAU, seconded by Mr. NEW, a vote of thanks was passed to the Chairman and directors, and the meeting broke up.

THE GRAND DUCHESS MINING COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, at Carmarthen, on Thursday, Nov. 25;

Mr. MATHEW SMITH (Chairman) presiding.

The CHAIRMAN said: During the seven or eight years I have been connected with this property I have been advised more than once by mining experts of some repute to abandon it, and I must say that on many occasions the prospects have not been as bright as I could wish, especially as nearly the whole of the heavy outlay during these years has been drawn from our own pockets. I have, however, never lost faith in the property, and have gone on from year to year with a strong confidence that the mine would ultimately prove a success. It is, therefore, as you may imagine, a great pleasure to me to meet you here to-day under such encouraging circumstances. Since we commenced dressing ore, some four months ago, under considerable disadvantages as to facilities for carrying on surface operations, the mine has not only become self-supporting, but has gone on steadily improving month by month, whilst our reserves of ore ground unwrought, as may be seen from the plan on the table, are being daily added to. Had it not been for a loan which has been contracted since the formation of the company, and which must be forthwith repaid, I should now have the pleasure of announcing the first division of profits, and that on a liberal scale. Between this and our next meeting we hope not only to wipe off this debt, but also to have sufficient surplus in hand to declare a handsome dividend. Before calling upon Mr. Davis, our engineer, to read his report, I must give him and the secretary credit for having directed the operations at the mine with great energy and economy. Had they wished to make a sensational display nothing could have been easier for them to do, for by the simple process of doubling or trebling their stoping hands they could have increased the output of ore in the same proportion. Their object, which has had my approval, and will, no doubt, have the approval of the meeting, has been to place the mine on a permanent footing, and to increase the returns gradually, with due regard to increase of reserves, until a certain depth is attained. As may be seen from the ore sales account, our monthly sales have gone on increasing month by month, while the shipments have been regularly made to the day on the second Thursday of each month. I now call upon Mr. Davis to read his report.

Mr. DAVIS read his report, of which the following is a *précis*:—Referring to the plan on the table, it would be seen that during the last six months a very large section of ground had been opened up. With the exception of Penlan shaft, and the first 30 fms. of the Hendir deep adit, which was in shale, the levels and winzes had been wrought in a lode of exceptionally rich character. The ore obtained by driving levels and sinking winzes had been more than sufficient to meet all working costs, while the reserves of stoping ground was now very considerable, and being daily increased. The metalliferous rock was the lower Llandelo; and as was usually the case in these formations, the lodes ran north and south, whilst there were east and west veins intersecting these. It was at the intersection of these lodes that the principal deposits were found. There were two or three fine lodes which had produced large quantities of ore on the Cystanog side of the hill, as yet untouched on the Penlan section, where the principal operations were now so successfully carried on. One of these lodes, the old workings on which he had only been able to inspect a few days ago, must apparently have been worked at a profit some 150 years ago. There was a nice rib of ore to be seen at these old workings now, and there was also a hole in the southern end charged with lime, which was evidence of the excavations having been made before powder and fuse came into general use. This and the other lodes would soon be tested on the Penlan section. The Hendir deep adit was within a few fathoms of reaching the rich section of ore ground driven through in the shallow adit; and as the winze now being sunk to meet it from the shallow adit was going down in a lode worth 4 tons per fathom, there could be little doubt that the Hendir adit would open up a rich section of ore ground, and thereby considerably enhance the value of the mine. It was four months since they had commenced dressing ore. The returns had gone on steadily increasing, and their returns were more than double their first sample, and their next parcel would be a few tons more than the last. They had tested the lode in the back of the shallow adit, and from a piece of ground measuring less than four cubic fathoms they had raised and dressed 26½ tons of ore, thus proving Captain Harvey's valuation of the lode at between 6 and 7 tons per fathom in the level below to be correct by actual test. Had it not been for the loan to which the Chairman had referred, they would now be in a position to declare a dividend at the rate of 25 per cent. He fully expected that at their next meeting the directors would be in a position to present a clear balance-sheet, and also to declare a dividend.

Captain T. HARVEY: During the last few months I have visited this mine on several occasions, and have observed with great pleasure the rapid development of its resources. I was for many years officially connected with the old Vale of Towy Mine, which immediately adjoins this property to the west. In 1856 I advised the Vale of Towy Company to take up the Grand Duchess sett, but my advice was not acted upon. The splendid courses of ore laid open by some of the levels more than justified the high opinion I always had of the mine. While some shallow

adit was being driven I valued the lode at 6 to 7 tons of ore per fathom, and I am very pleased to hear from Mr. Davis's report that my valuation has been substantiated by actual test. Looking at the rich lode you have in the winze going down to meet the Hendir adit, I have no doubt but that adit will open up another section of rich ore ground.

A Shareholder, after highly complimenting the Chairman for the plucky way in which he had stood by the property, referred to the fact of several important points now in suspense pending the extension of the deep adit. At one of these points, the south end of the deep adit, there was a lode worth 3 to 4 tons per fathom, from which some of those splendid samples on the table were that morning extracted.

Mr. Davis, in replying to a vote of thanks, stated that he had a few days ago been out "prospecting," and had found not far from the mine, and not more than three miles distant from the town, another lode of very promising character, with lead ore on surface, and which they hoped to secure.

After Mr. Greenwood, Mr. Cottrell, and Mr. Forrest had spoken as to the value of this new industry, for which they were so much indebted to the Chairman, to the town and trade of Carmarthen, the meeting, after a cordial vote of thanks to the Chairman, separated.

BEDFORD UNITED MINING COMPANY.

The half-yearly meeting of shareholders was held at the registered offices of the company on Thursday—Henry C. Tate in the chair. The minutes of the meeting held in June were read, when the accounts were produced, with the auditors' certificate attached, and the directors' report. It was stated that the loss on the last half-year had been augmented by charging seven months' costs against six months' returns, and the additional expenditure incurred in developing the Bridge lode and laying down the rods, &c., for the purpose of unwatering M'Callan's shaft. Some discussion took place on the propriety of suspending operations on the north lode until an improvement took place in the price of copper; but it was so clearly proved that the two ends now driving are near paying cuts, and that it was desirable to reach the great slide, it was not considered advisable to make any change in the present mode of working the mine.

The Secretary informed the meeting that the arrears of calls had been reduced, and that the residue was good, and that there would be no need for a further demand on the shareholders, as far as he could see, for some time to come. The question of heavy royalty was again discussed, and seeing that the company have incurred a large outlay in putting down machinery to work the Bridge lode, the shareholders expressed their opinion that his Grace the Duke of Bedford should again be asked to render some assistance to the company, either by a remission of or reduction in the royalty; and the secretary was desired to obtain an interview with his Grace's representatives as early as possible.

The Chairman expressed his regret at the absence of Mr. McCallan, through illness, and trusted that he would soon be able to resume his place at the Board.

The proceedings terminated with a vote of thanks to the Chairman.

WEST CARADON MINING COMPANY.

A three-monthly meeting of adventurers was held at the offices of the company, Gracechurch-street, on Thursday,

Mr. Orlando Webb in the chair.

Mr. John Watson (the secretary) read the notice calling the meeting. The accounts showed a balance in hand of 538*l.* 12s. 10d.

The following report was read from Capt. Richards:—

Nov. 30.—In presenting you my report for the general meeting, to be held on Dec. 2, I beg to say the mine, on the whole, has considerably improved within the last few weeks, the winze, sinking below the 27 on Gilpin's lode, is now down 9 fms. 4 ft. 6 in. below this level, and I think we have about 2 fms. more to reach the next, or 38 fms. level. The lode in the winze is large and well defined, over 3 ft. wide, and carrying two good walls, with two leading branches, one on the south, or foot wall, about 4 in. wide, the other north, about 9 in. wide. They have each a very kindly appearance, and will produce from ½ to 1 ton of copper ore per fathom, and from their present appearance, I think, will improve as depth is attained. I would here remark that no level below this point has been driven so far west of main cross-course as the winze above referred to. This lode seems to have been missed at the deeper levels for a number of years, and a lot of money spent in trying to find it, but being unsuccessful, further search was given up. I now think we have found it, and hope to find it productive when properly developed. This lode, in the back of the adit level, is improved, and will now yield 2 tons of rich copper ore per fathom. In the cross cut at the 17 fm. level, south of Gilpin's, towards Kellow's lode, we have intersected two branches, producing a little ore, and have pisced the same pare of miners to open out a little on one of them, to see if it makes away from the cross-cut. Vivian's north lode, in the back of the 50 fm. level, will yield 3 tons of copper ore per fathom; this lode, in the 38 fm. level west of cross-course, will yield 1 ton of copper ore per fathom, and seeing we have had an orey lode through the who whole drivage at this level, and a good lode in the rise in the back of the 50 fm. level, I think we may calculate on having a good piece of ore ground between those points. This lode in the back of the adit level has made a splice, lode now yielding 1½ ton of copper ore per fathom. The clearing and timbering the 38 cross-cut on the main cross-course, together with casing, dividing, putting in and repairing skip-roads in both shafts, is nearly completed, and will be ready before the engine, which I am expecting to get sent in every day, and which will be ready to work within three weeks from the time of delivery. In conclusion, I beg to say that almost every week some favourable indications present themselves; consequently I believe that if this shallow and, comparatively speaking, untried ground is worked with spirit and in a miner-like manner, that good results will follow, and good profits be realised.—N. Richards.

Capt. Richards produced a specimen of ore from the adit level, which he said he had taken when he was down the mine last Tuesday. He said the lode was 2 ft. wide, and about 14 in. of that width was almost as solid as the stone he produced. He had never seen better looking ore in the West Caradon Mine, and if it should prove the top of a bunch it would be a little mine in itself. The specimen was what was called "steel grey ore," and the miners were very sanguine about it. If it continued as it was it would be worth, to put a low estimate upon it, 30*l.* per fathom. He (Capt. Richards), in reply to a further question, said it would not be difficult to increase the product, but it would not be wise to do so, as his great aim was to prove the mine in a miner-like way, and take away what ore they could without injuring the mine.

The Secretary asked Captain Richards the depth of the adit at the point at which the lode was met with?

Captain Richards, in reply, said the adit at the point referred to is 40 fms. deep. They had risen 6 fms. on the lode, and therefore had 34 fms. of backs before them.

Mr. Risley: Could you not set tributers to work?——Capt. Richards said labour was not over plentiful at the present time.

The Chairman asked what would be the monthly cost for the next three months?——Capt. Richards said he estimated it would be about 200*l.* a month.

The accounts and report of the agent were then passed.

The Chairman said they had 583*l.* 12s. 10d. in hand, and they had heard what the monthly cost would be for the next three months, and it was for the meeting to consider what the call should be. He asked Capt. Richards how many tons of ore they would be able to place on the market in the next three months?——Capt. Richards said about 70 tons; they could raise more, but it would not be marketable.

On the motion of Mr. Risley, seconded by Mr. Hodgkinson, a call of 1s. 6d. per share was then made, payable on the 18th inst.

Mr. Jehu Hitchins, who had entered the room, and inspected the specimen of ore, expressed his opinion that it contained from 40 to 50 per cent. of copper, and also some silver.

Capt. Richards said there were several other points which he intended to work, and would be glad to do so as soon as he could.

The Chairman: You are of opinion that we have a first-class mine?——Capt. Richards: I am of opinion that we have a first-rate speculation.

A vote of thanks to the Chairman closed the proceedings.

East Pool.—At the three-monthly meeting, on Monday (M. G. A, Michell in the chair), the accounts showed a profit of 7157*l.* 13s. 5d., and a total available balance of 7374*l.* 15s. 10d. A dividend of 6400*l.* (1*l.* per share) was declared, and 974*l.* 15s. 10d. carried forward. The report of Capts. Maynard, Bishop, Penhale, and Curtis, detailing the operations in the mine, was submitted. In a postcript they say:—"We deem it right to inform you that at the 200, during the last cores working in cross-cut, some stones of tin and copper ores have been blasted out with a hole, and we are led to think that we are now in close proximity to the great lode." Capt. James complained, as a dealer at the Redruth Mining Exchange, of the inconvenience of the transfer books being closed for nine days preceding the meeting. Mr. Martyn (the purser) stated that although the accounts were closed on the Saturday week preceding the meeting, the transfer book was only closed on the preceding Saturday night, so that there was only the Sunday intervening between the closing of the books and the day of meeting. The Chairman suggested that in future they should hold the meeting the Monday after the accounts were closed instead of a week after. He further stated that their average price for tin during the quarter was 77*l.* 7s. Mr. Martyn, in reply to an enquiry, read the account, which showed that they had sent to the stamps during the past twelve weeks 226 tons 12 cwts. 6 lbs. of tin, and they had sold 222 tons 9 cwts. 3 qrs. 3 lbs, and increased their stock by about 17 cwts. The total loss on the twelve weeks had been 3 tons 2 cwt 1 qr. Their total raisings for the twelve weeks ending Sept. 6 last, were 5936 tons 7½ cwt. of tin and tinstone. The average produce was 1 cwt. 5 lb. per ton of stuff. The total of tin and tinstone raised during the last twelve weeks was 6182 tons 5 cwt. 1 qr., and the average produce per ton was 1 cwt. 2 lbs., so that there was only a difference of 3 lbs. in the average produce for the last twelve weeks as compared with the previous quarter.

Scottish Australian Investment Company.—The half-yearly general meeting of shareholders was held at the City Terminus Hotel, on Friday. Alderman Sir Charles Whetham, the Chairman, presided, and in moving the adoption of the report congratulated them on their being able to recommend a dividend at the rate of 10 per cent., and a bonus of 3¾ per cent., notwithstanding the important drawback of the sales of sheep in the half year having been slack, and the prices realised very low. It was impossible to calculate on the continuance of an increased bonus, but their position was based on a solid foundation. The new capital recently created had been well invested, and had assisted in making up the profits on the present occasion. He believed that the demand for money in the colony would shortly increase. The condition of their pastoral properties was very favourable, and the amount of water they had stored up in recent years had been of great advantage to them in the dry weather. On Bowen Downs, Mount Abundance, Silve Down stations they had expended 185,000*l.* in various improvements, which had enabled them to have plenty of grass and water for their sheep and cattle, and also to effect a great saving in cost of labour and in other expenses. They had 120,000 acres on the three estates, which might be expected to yield increased returns when the prices of sheep and cattle became more favourable. Their stock on March 31 was 337,578 sheep, 75,836 cattle, and 2564 horses. He then alluded to the high prices of their stock in the market, and said they had been able to place debentures on the London market at 4 per cent. The report was unanimously adopted.

REVIVAL OF MINING OPERATIONS IN THE TAVISTOCK DISTRICT.

During the past six months there has been a considerable revival in mining throughout the Tavistock district, and there still seems a further prospect of the operations being extended. It was only a few weeks ago that two mines in the neighbourhood of the Devon Great Consols were resuscitated under most encouraging circumstances, and last week a third—the Lady Bertha Copper and Tin Mine—was restarted with equally bright prospects. The Lady Bertha Mine, situated in the parish of Buckland, and within easy reach of Tavistock, was abandoned about twelve years since, chiefly on account of the depression in mining and the unfavourable sale for the mundic, raised in large quantities from the mine. The property eventually was sold to the directors of the new compay, and they engaged with Messrs. James and Henry Pearce, of Tavistock, to put the mine in working order, and last Thursday their labours were brought to a successful termination. The capital of the new company is 15,000*l.*, the shares being sold at 1*l.* each. To set the mine to work has entailed an expenditure of between 2000*l.* and 3000*l.* All the machinery on the mine is worked by water-power, and the cost of operations will be much less than if steam were employed. For the water supply the company pays 50*l.* a year, whereas if steam were brought into requisition at least 100*l.* a month would have to be spent in coals and other expenses, such as engine-drivers, fitters, &c. During the time operations were previously carried on at the mine about 35,000*l.* worth of copper and tin alone was sold, but the shaft had only been sunk to a depth of 53 fathoms. The lodes are particularly rich in arsenical mundic, and in future, in addition to working for copper and tin, the raising of mundic will be a special feature in the operations, as there is a large and increasing demand for it. As showing the quantities of mundic upon the property, it may be stated that since the mines ceased working the burrows have produced large quantities of this mineral, and during the working no more than was absolutely necessary was brought to the surface. This was owing to the fact that no sale could be found for it at the time. The water by which the machinery is worked is conveyed to the mine from the River Walkham by a leat three miles in length, giving a fall at the mine of over 200 ft. Unlimited power is thus given for working the machinery, and the supply of water will be continuous all the year round. A powerful water-wheel, 45 ft. in diameter by 5 ft. wide, has been erected by Messrs. J. and H. Pearce, and a line of rods works the pitwork in the shaft. Preparations are also being made for erecting another water-wheel, 30 ft. by 4 ft. wide, to work a double-acting hauling machine, and this will be in operation for hauling by the time the water is pumped out. The crusher will also be attached to this wheel. In addition to the old Lady Bertha the company have acquired the sett to the east, formerly known as East Bertha Mine, and by practical men this is considered a valuable addition to the property, as the lodes run in that direction. The company have erected a substantial bridge across the River Tavy for the purpose of facilitating the carriage of ores to the quay at Gawton. On Nov. 25, just before 1 P.M., the water was turned on, and in a few minutes the machinery was set in motion. As the massive water-wheel moved round for the first time Mr. Sharpe dashed a bottle of champagne against it and christened it Wheal Emily. The large number of spectators who had assembled at the spot gave lusty cheers for the success of the undertaking.

The company next proceeded to the mouth of the shaft, which was named "Sharpe's Shaft." Having satisfied themselves that the engine was fairly started, and that the water was coming out of the adit, the company adjourned to the account house, where dinner was served.

On the removal of the cloth, the Chairman (Mr. J. C. Sharpe), one of the directors, read a telegram he had received from Mr. Foakes, the chairman of directors, expressing sorrow that illness prevented him from being present. A letter was also read from Sir Massey Lopes, M.P., the lord of the soil, saying that he was unable to be present, because he had left England for Cannes. But for this he would have been glad to have met them to drink to the prosperity of their enterprise; and he most sincerely hoped that the adventurers would be fully compensated for the investment they had made.——The usual loyal toasts having been honoured, the Chairman, in proposing "The Health of the Lord," said they were not in Ireland, so he thought they need not be afraid to drink the health of the landlord. Sir Massey Lopes had shown great interest in the development of mining, and in this instance had given evidence of his willingness to grant new leases and reduce royalties. He was now in "the cold shade of opposition," and had had to go to a warm climate to make up for the loss of heat. (Laughter.) When his party again got into power he hoped Sir Massey might occupy the distinguished position which his abilities entitled him to hold. (Applause).

The toast having been drunk, the Chairman proposed "Success to Lady Bertha Mine." He said it must be apparent to all that the property they had just entered upon was a very important one—(hear, hear)—and important in this way, that they had such an admirable water power; and one of the chief reasons for his entering into that concern in preference to others in the neighbourhood was on account of the mode the directors proposed working the mine. The saving obtained by water over steam power was equal, he maintained, to a 10 per cent. preference dividend on two mines of equal productive capacities; and besides this many other advantages in the mine presented themselves. (Hear, hear.) He should here mention that the advice given not long ago by the editor of Truth in his paper to persons intending to become shareholders in mines was —"Never go into a mine until two or three gangs of adventurers have been ruined by it." (Laughter and applause.) He (the speaker) could not say that those adventurers who had previously conducted Lady Bertha Mine had been ruined, because they received considerable dividends out of the undertaking; but he would say that the mine had not been properly worked, and the 35,000*l.* worth of copper ore raised did not represent all the mineral in the mine. He did not agree with a remark he had recently heard at Tavistock, that the shutting up of the mine was due to the depression. (Hear, hear.) It would have been going on at the present period but for exceptional circumstances, and been paying all expenses instead of being a dismantled mine. Now, however, there had been a general revival in the demand for metals, and with this fact in view, and with a capital of 15,000*l.*, he hoped the concern would be worked with success. He was satisfied from what he had seen of the property that day that it would be to his advantage to secure all the shares he could at anything like par; but he did not, however, believe he would be able to get them at such a moderate price. One of the advantages to the present company was that the former adventurers incurred all the costs of bringing the water, a distance of between 3 and 4 miles, at a cost of several thousands of pounds, to the mine, and with a trifling expense to the shareholders they had secured this power to work the mine. (Hear.) He had been told by competent judges that the mine could be worked more economically than any other in Devon and Cornwall. They were no great distance from a shipping port to send off the ore, and they had no coals to pay for. As to the mundic in the mine, he should mention there was still a great quantity to be brought to the surface, and as an evidence of the quantities raised by the previous directors he need only point to the burrows, which had been turned over and over again for mundic, and such large quantities of the mineral had been discovered that the person to whom the burrows were let had made a fortune off the metal. Old miners who knew the levels gave as their opinion that very considerable quantities of mundic were underground, and as soon as the water in the mine had been pumped out the mineral was ready to their hands. He must not neglect to express the gratitude of the directors to Sir Massey Lopes in aiding them to acquire an additional sett—the old East Bertha—in which direction all their lodes were running. Alluding to the bridge which had been constructed over the River Tavy, Mr. Sharpe said that it had stood the test of the most severe floods ever known in that district, and where other bridges had been swept away this one remained uninjured. This fact alone, he thought, was sufficient evidence of the care and the substantial work which Messrs. Pearce were bestowing upon everything on the property. (Applause.)

Mr. James Pearce, as one of the largest shareholdest in the mine, returned thanks. He (Mr. Pearce) endorsed all that the Chairman had stated with regard to the value of the property. He remembered the starting of the mine many years ago, and was well acquainted with the circumstances which led to the abandonment of the property, and he unhesitatingly asserted that the mine was worthy the attention of every person who desired to invest his money in mining. The mine had produced much superior ore and mundic, and there were still ample reasons for being satisfied that considerable quantities of mineral could be easily raised. (Hear, hear.)

Mr. Wright proposed "The Health of the Engineers (Messrs. Loam and Son), and the Contractors for the Machinery (Messrs. Pearce)." The former gentlemen, he said, were so well known to every person connected with mining throughout the whole kingdom that it would be superfluous for him to say more than it was always a guarantee to shareholders in mines when their machinery was being erected under the guidance of the eminent and respectable firm of Messrs. Loam and Son. Mr. James Pearce, as many of them were aware, was one of the directors of the company, but when the question of erecting the machinery was raised he immediately resigned his seat at the board, so as to enable his firm to tender with other firms for the contract, an example, he thought, which it would be well for directors and committee men in similar undertakings to copy. Everyone must be pleased with the work of the engineers; and he was confident if anything was wanting to make the mine a success the Messrs. Pearce would be ready to do what was necessary.

Mr. Matthew Loam, in returning thanks, referred to the revolution which had taken place in the working of mines during the past few years. He said that although he was partial to steam being employed in mines, yet all the improved modes of working could be carried on by water power, and it was satisfactory to know that the water supply to Lady Bertha Mine was about the best in the two counties. Water power was just as available in working the rock-drill as steam, and he hoped that no time would elapse before the improved system of working by the rock-drill would be introduced into that mine. He then proposed "The health of the Chairman and directors of the Company."

The Chairman briefly returned thanks.

Mr. Criper gave "Success to the neighbouring mines, associating with the toast Capts. Hancock and Skewis." He mentioned that he was about the largest shareholder in the mine when it was abandoned, and he did not hesitate to say it was through bad management that the concern had to be closed. The Tavistock district was very poor, and they had to go to London to seek the capitalist out, as it was to the latter they looked to develope the mines around. As to the mines being made to pay in that district, he asserted that it was only after one or two workings that they had been successful, and if in future more money was spent underground than above, the mines would be prosperous. Previously eight-tenths of the capital had been thrown away above ground, and only two-tenths below, and he hoped in future this would be reversed.

Captain Hancock briefly replied.——Capt. Skewis, who also responded, said that the mine was most favourably situated with regard to the great granite range running through the two counties. He had been underground at the Lady Bertha Mine many times, and he had had an opportunity of seeing that the lodes were rich for copper and arsenical mundic. The former directors had only driven 60 fms. below the surface, and they had only come into the first lot of ore. If they drove further down other patches of ore would be discovered.

The health of Capt. Neill, who is the manager of the mine, was next drunk and, in responding to the toast, he gave ample testimony of there still being an abundance of copper and other ore in the mine, and this, he said, could be easily reached.——The health of the Visitors, coupled with the names of Messrs. Endean and Beckersfield, and success to the sister enterprise (South Wheal Crebor) was drunk.

Mr. Endean thanked those present for the kind manner in which they had received this toast. He congratulated the people of Tavistock upon the revival of mining enterprise in their district, at the same time cautioned them against a silly and jealous custom so prevalent in mining districts of crabbing each others properties. There was a good time coming for them all, and with mutual assistance they were bound to succeed.——Mr. Beckersfield also replied.

A few minor toasts brought the proceedings to a close after a very successful day. As the company were leaving, Capt. Neill reported that they had forked 3 fms. of water since the starting of the wheel.

FOREIGN MINING AND METALLURGY

The Belgian iron trade has not shown much change. On the one hand, it is difficult for prices to fall much lower, and, on the other hand, there is no decided tendency upward. The explanation of this is that there are no important transactions in sight. Some orders have come to hand—or rather, some enquiries have come to hand—on foreign account, but the prices offered have been discouraging and no contracts worth mentioning have, accordingly, been concluded. Pig-iron has maintained its price fairly well in Belgium. Iron has been quoted upon the Belgian markets at 5*l.* 4s. to 5*l.* 12s. per ton. Fine plates are sought after at 10*l.* per ton, while ordinary plates have brought only 6*l.* 16s. and even 6*l.* 12s. per ton. The Thyle-Château Works are about to be commence the manufacture of steel, and a Leeds firm, which supplied the requisite apparatus to Bolckow, Vaughan, and Co. (Limited) when that firm applied itself to steel making, has been set to work. The converters at Thy-le-Château will, however, not be so large as those at Eston.

In the French iron trade producers show a disposition to reduce their production in order to maintain prices. Merchant's iron has been quoted at 6*l.* 16s. per ton. Tenders have just been delivered for a great bridge to be built over the Douro. The lowest tender was that of the Fives Lille Company, which required 48,760*l.* for the work. The tender sent by the Creusot Works amounted to 67,600*l.* Handyside, of Derby, tendered at 81,200*l.*, and Dixon, of London, at 94,000*l.* The contract was awarded to the Fives Lille Works. A contract has just been let at La Haye for 4000 tons of steel rails. The lowest tender was that of the Union of Dortmund (32,655*l.*). Messrs. Bolckow, Vaughan and Co. (Limited) tendered at 37,296*l.*; and Messrs. C. Cannell and Co. (Limited), Sheffield, at 39,299*l.* We learn from the Haute Marne that the iron trade has shown a tendency to improvement in that department. In the Nord also the tendency of prices appears to be slightly upwards.

Milder weather which has prevailed in France has not assisted the French coal trade. The requirements of consumers having become less urgent, sales have slackened, and prices have been maintained with difficulty at their former level. The condition of the Belgian coal trade remains pretty good, and there are few complaints on that score. Deliveries have been made with considerable activity, and colliery proprietors have found it somewhat difficult to meet the requirements of their clients. Upon the whole, Belgian coalowners appear to be tolerably well satisfied with the situation. A strike having reduced the extraction of the Anzin and Denian Collieries, heavy deliveries of Belgian coal have been made to France. Foreign combustible of all kinds has been in some demand in France from the cause just mentioned. In the Liége group the production is readily disposed of, and no stocks are being formed at the pits mouth. Prices have been generally well supported in the Belgian coal districts.

The aspect of the German coal trade is at present favourable most of the collieries are fully engaged, although the demand for coal for domestic purposes is not fully satisfied, deliveries continue on an important scale. The manufacture of briquettes has been commenced in the Dortmund district upon the system adopted in England, Belgium, and the North of France. The Dalhauser-Tiefbau Colliery has taken the initiative in this manufacture, for which Westphalian coal is said to be well adapted.

Reynolds' Hints to Investors.—This is the title of a well-written little *brochure*, in which Mr. John B. Reynolds, of 37, Walbrook, has condensed much valuable information, not only relative to those shares and stocks which may be regarded as suitable for permanent investment, but also regarding those more speculative securities which are so attractive to capitalists who are not unwilling to run a little risk on the chance of getting large returns. As Mr Reynolds justly says—"How and when large profits can be made are questions of vital import." And he goes on to point out that accurate information and prompt action lead to the desired result. Mr. Reynolds is quite correct in the remark he makes, that investors too frequently wait until securities have risen in market value, instead of "going in" before the advance has taken place. At the present time, when an undoubted revival of trade has encouraged the launching of new companies, attention should be directed to the desirability of having the smallest capital possible on which to pay dividends. Mr. Reynolds appropriately draws attention to this, and he also gives prominence to the necessity of having as few promoters' shares as possible. "What is the capital on which dividends are to be paid?" ought to be one of the first questions asked by judicious investors, and yet, as Mr. Reynolds says, this is one of the last inquiries which is made. Undoubtedly the ill-advised policy of heaping up capital has been fatal to railways and many other descriptions of companies. As Mr. Reynold's says:—"This question of capital is, indeed, a vital one, and no shareholder in any company, of whatever description, should fail to become acquainted with it as far as he can do so." In a well considered paragraph Mr. Reynolds refers to the Cost-book System, which was formerly universal in the management of Devon and Cornish mines, and which, though now supplanted to some considerable extent by the Limited Liability Act, really contains in its provisions the essence of limited liability. Mr. Reynolds is a strong advocate of the retention of the Cost-book System for the working of mines, and in this view he will, no doubt, be warmly backed up by many of the most experienced and practical Devon and Cornish miners. On this subject of the superiority of the Cost-Book System, Mr. Reynolds very lucidly and forcibly expresses opinion in a few words. He says:—"The shareholder can, by a stroke of his pen, terminate his liability at any moment, and he can, and he ought, together with his co-partners, to control the expenditure. No preference or debenture capital is possible; all shares have to be ordinary, and upon them only are dividends paid. For the economical and safe working of British mines there is not the least necessity for the cumbrous, dark, and expensive system of the Limited Liability Act, even to meet the views of the most timid." Mr. Reynolds will find many who cordially agree with him on this point. The author reminds his readers that the markets are composed of "bulls" and "bears," and a variety of classes which must always live. "These gentlemen always have regulated, and always will regulate, the markets to suit their own convenience;" but as Mr. Reynolds points out, the intrinsic merit of an undertaking is not affected by a temporary rise or fall in the price of its stock, and the remark is appropriately made that—"A little more goodwill and liberality on the part of the capitalist would cause him to view with equanimity, if not with pleasure, the ups and downs of the market, recollecting, as he ought to do, that the persons who make up the market actually live by those fluctuations, and that unless those persons prospered there would be no market at all." A good deal might be said in commendation of this little pamplet; suffice it to add that it contains much valuable information, and should be read by every investor.

Last Chance.—The shareholders in this undertaking may be congratulated upon the fact that the mining outlook in Utah is, according to the New York Engineering and Mining Journal, steadily improving, as indicated both by the bullion shipments and the activity with which large companies are operating. Indeed, the English capitalist seems to have caught the Utah mining fever again. The old Last Chance Silver Mining Company, of London, has been reorganised, and will purchase and work the Last Chance and Hooper Mines in Bingham, and the Opulent and Silver Maid Mines in Black Jack Gulch, and also purchase or erect furnaces at Sandy—the Swansea of Utah. The Last Chance Mine was opened in 1872 by an English company, and developed to a considerable extent, when instructions were given to take out the ore and send it to market. Developments ceased. About 81,000,000 worth of very fine ore was extracted; a little more work was done; and since that period the mine has been closed down. The present company proposes to sink the shaft 1000 ft. deep from the tunnel level, which is at this time in 800 ft. This shaft, now down something over 200 ft., is improving greatly as depth is attained, and in the bottom showing a large body of high-grade smelting ore. The Hooper Mine adjoins the Last Chance on the west, and has sufficient developments already to expose considerable ore bodies. It probably is not second in merit to the Last Chance itself, and both can be worked by the same machinery and management. The company also expects to purchase the Northerly Last Chance Mine, adjoining the Last Chance on the east, the two mines being only divided by the dip covery shaft, each claim containing 1200 ft. in length. The same machinery would be ample for the entire consolidation. It has always been a mystery why such valuable mining property should lie idle, when all that is required is a small amount of capital and proper machinery to make each one or all of the consolidation as fine a property as there is in Utah or in any other country. The Opulent and the Silver Maid show fine milling ore, which assays from 800 to 2490 per ton; but they need development. This company is able to place its mine on a paying basis at once, and these mines certainly warrant vigorous ope

rations. Success in this instance will do much to restore the confidence of British investors in properly managed Utah mines.

FOREIGN MINES.

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Rio de Janeiro, Nov. 30: Produce eight days (second division of November), 4750 oits.=1240*l.*; yield, 5·7 oits. per ton. All going on well.

RICHMOND CONSOLIDATED.—Telegram from the mine at Eureka, Nevada: Week's run, $50,000, from 960 tons of ore. Refinery, $45,000.

— R. Rickards, Nov. 10: I beg to hand to you report of the different operations for the past week:—Lizette Tunnel cross-cut has been extended 10 feet in very favourable ground. The 200 north cross-cut has been drifted 6 ft. in very hard ground. The 500 north from No. 12 chamber has been advanced 15 ft. in good-looking ground for ore. The 800 north from No. 14 chamber, has been drifted 9 ft. without any change to mention. The 600 west drift has been extended 12 ft. in the same character ground as last reported. The 600 south from main west drift has been drifted 8 ft. in very favourable ground; in the last 30 ft. drifted several pockets of low-grade ore have been encountered, which may lead to something of value. The 600 south, on fissure, has been advanced 4 ft. in very hard limestone. The 600 north from No. 14 chute, has been extended 8 ft. without any change. The 700 west from shaft has been advanced 5 ft. in hard limestone. The 700 north-west from winze has been drifted 12 ft. in favourable ground. The 700 south-west from winze has been extended 3 feet in hard ground. The 800 west drift has been advanced 5 ft. in very hard compact limestone. The 800 north-west, on fissure, has been drifted 13 ft.; the fissure is well-defined and regular, with favourable ground for ore on the western side. The 800 east quarzite drift has been advanced 9 ft. without any change. The 900 west has been extended 6 ft. in hard limestone. The 900 north has been drifted in 8 ft. in favourable ground for drifting, but it is not so favourable for ore as it was about 70 ft. back from the present end. The winze sinking below the 900 from north drift is down a total depth of 23 ft.; the fissure is still well-defined and regular, and looks very favourable for ore. Connections have been made from the 200 to the back of the No. 15 chamber, and a stope started at the point of connection, which is about 60 ft. below the 200. The south end of No. 13 chamber is somewhat improved. No. 14 is without change since my last, still looking very well. No. 15 has improved in the eastern end, where we have sunk a winze in good ore 40 ft., with ore still going down. Below the 700 in the eastern part of the mine it is not looking quite so favourable; the ore is narrow. It is being followed, and hope to find a place where it will make out into the lime, where we may expect to find a larger ore body. No. 1 furnace has been stopped for repairs; the foundation plate has risen, which will be replaced by a new one. No. 2 furnace has been started in the place of No. 1. Last week we lost about two days on account of the wrist-pin of the engine getting loose; a new one has been put in, and is again running smoothly.

ALMADA AND TIRITO CONSOLIDATED.—Telegram from Mr. J. H. Clemes, dated Nov. 13: We have remitted Messrs. Wedderspoon and Co. $1000 (Mexican).

LA PLATA MINING AND SMELTING (Leadville).—Statement for October: Ore purchased, 2005 tons; ore smelted, 3054 tons; lead produced, 421 tons; silver, 131,697 ozs.; silver-lead bars consigned to refiners, 448 tons; value of consignments, $184,047, equal to 38,343*l.*

NEW GOLD RUN.—F. M. Chadbourn, Nov. 5: The first run from the mill was perhaps as good as could be expected from character of dirt crushed, but is only enough to about pay expenses. I had hoped to the last minute to clean up better, and not call on the company for any further amount, but I cannot see my way unless I have assistance. You will note by my letters of recent date that I have explained how a large amount of this dirt already crushed was from above the bed rock, but so mixed with the bottom as to make it impossible to separate, and the whole was put through; so I think this run is no criterion of what we are going to do. As soon as we get drift extended far enough to open a good breast, say 60 or 70 ft. wide, and on the virgin bedrock, there is every reason to believe that this bottom will pay well for milling. If we can only pay expenses until the ground is well opened it will be doing as well as can be expected from the character of dirt milled. The mill is still running, and doing well, crushing about 70 to 80 tons per day. The weather still holds fine; we have had no rain yet, but are likely to get some soon.

SOUTH-EAST WYNAAD ESTATES AND GOLD.—Captain Roberts, Nov. 6: At Needlerock the new reef is turning out some very good stone. I have tried several samples of it during the week; some yielded as high as 3 ozs. of gold per ton, and some only showed fine colours of gold. I judge the average to be over ½ oz. of gold per ton. On account of the great width of this reef (which, according to present appearances, must be from 10 to 12 ft.), it is impossible to get at the actual value of it by taking small samples; but taking all things into consideration, especially the small cost of excavating, I consider it to be a good thing, and well worthy of being worked on a big scale. The manager, Mr. Dawson, also reports, Captain Roberts tells me, that the whole mountain is worth putting through the stamps, and that 15 or 20 stamps could be profitably employed for many years.

COLUMBIAN HYDRAULIC.—W. S. Welton, Oct. 19: Malpaso: Run No. 71, from Sept. 19 to Oct. 17, during which washing was carried on for 539½ hours, has produced, from the clean-up of all the sluice, $3080·25 (the cost for the same period being $2055·57½, including $240 spent on the No. 2 opening) The produce of the present run shows an improvement of $0·36 per hour upon last run, and the gravel continues good on all sides. I have not been able to put in any more sluice at the new opening yet, the late heavy rains having flooded the old works on several occasions, and brought down an extraordinary quantity of tailings. We have, however, apparently got round the boulders, and a further length of 100 ft. at head is now nearly got down to grade. Since my last Clarke's shaft has been sunk 6 ft. 4 in. without any sign of bed-rock. Latterly for the last 15 days all we could do was to keep the water, and nothing was sunk. The water having so much increased in quantity since the wet weather set in, I have suspended operations until larger pumps can be made. The gravel is now less hard, and of good quality.——Malabar: The late heavy rain caused some damage to the ditch, which prevents cleaning up in time for this mail. The final clean-up will be made, and the gold bar resulting dispatched by mail of Nov. 11. A portion of the tube is now being carried over to Malpaso.

ANTIOQUIA (FRONTINO).—The following is the statement of profit and loss for the month of September, 1880:—70 tons of ore produced 35 ozs. of gold, or an average of 10 dwts. per ton. Estimated value of the gold, including profit on exchange, 190*l.*; cost at the mines, at Medellin, and in London, 564*l.* 18s.; loss, 374*l.* 18s. In addition to the above cost the sum of 254*l.* has been spent on capital account.

FRONTINO AND BOLIVIA.—The following is the statement of profit and loss for the month ending September, 1880:—1675½ tons of ore produced 2404 ounces, average 1 oz. 8 dwts. per ton; gold bought, 335 ozs.: total, 2739 ozs. Value of the gold, including profit on exchange, 744*l.*; cost at the mines, in London, and at Medellin, 337*l.*; paid for gold bought of tributers, 72*l.* 12s.= 410*l.* 12s.; profit, 334*l.* 8s. In addition to the cost of 337*l.*, the sum of 99*l.* has been spent on capital account.

COPIAPO.—Thos. B. Hall, Oct. 9: Dulcinea: Fletcher's shaft has been sunk to the 180, and I have set the two drivages at this level north an l south to the shaftmen, at $20 per metre. After the levels are driven both ways a short distance I intend to open the plat, this mode of working out the ground being the safest and most expeditious. The lode in both ends is about 20 in. wide of yellow ores, and produces 2½ tons per fathom in each drivage. After the plat at the 180 is completed we shall commence to sink our shaft to the 190 under a penthouse, as under the old system it was a very slow process in getting down on account of the men being unable to work but in one corps when the engine was idle, they having also to make frequent stoppages on account of breakage, &c. I think it is very important to get down our shaft as quickly as possible looking at our present prospects. The 170, driving north, did not turn out to expectation during the past month, as the branch of ore cut out very shortly after the last setting, but since then it has been daily looking more promising, and though at present I cannot put any valuation on it I think this will not be the case long, looking at the marke l improvement that we have had in the 160 end above, which is about 8 metres further north than the drift below; reset to two men, at $30 per metre. The 170 south set to two men, at $30 per metre. The lode here has widened a great deal, being now more than 6 ft. wide; it produces 8 tons of ore for the width of the drivage, which does not carry the whole of the lode. We have one man coming on behind stripping down the remainder. The winze sinking below the 170 south has also improved, being 3 ft. wide, and yields 4 tons of ore per fathom. I think we shall have a change here very quickly into yellow ores as we take out a few fathoms of this class at present; set to three men, at $30 per metre.

The 160 north set to two men, at $15 per metre; driven last month 4·30 metres. The lode is 3 ft. wide, and yields 2½ tons of ore per fathom; it still carries a large proportion of iron, but I hope that it will shortly clear itself of this. In the 160 south we have come home to the large cross-course which cut out the lode at the 150 south, and in fact in all of our upper levels, and in the 160 we have met with a similar result. The winze sunk from the 150 must have come down on another lode on hanging wall of level, as we have passed some metres beyond the distance required for communication. I have four men driving a cross-cut into the hanging wall to break out the winze as quickly as possible, when I shall resume the driving on the winze lode to see what effect the cross-course will have on this part of the lode. The winze sinking below the 160 south, set to three men, at $35 per metre; sunk during the past month 3 metres. The lode is 3 ft. wide, and yields 2 tons of ore per fathom, showing some considerable falling off at this point, but I am convinced that we shall shortly have an improvement again, as this winze must come down on about the widest part of the lode in the 170 below. The 150 north is set to two men, at $20 per metre; driven last month 1·77 metres. The lode has fallen off a great deal, now yielding 1½ ton of ore per fathom. The man who was sinking the chiflon in the 150 south, on account of its being rather poor at present, is put to drive a cross-cut west in the vicinity of the cross-course at the same level. The 140 end north has been discontinued, as the end is very poor and the lode small, and the man is put some distance back to drive a cross-cut to the east in a small branch of ore in that side. The two men still continue taking down the back of the 60 south for leveling the tramway.

There is one man driving the cross-cut for ventilating the engine-room, and we are short 7 metres here to communicate. The excavation on the top of the hill for sinking the new shaft has been completed, and I have asked some English miners to put in tenders for it to sink by contract 40 metres to take down the whim from its old position above Fletcher's, and remove and place it over Holland's. I have also set a level to drive south in the bottom of a chiflon about 40 metres deep to come back under Holland's shaft, to two men, at $18 per metre. There are 19 men on tribute above the 130. I have been obliged to rise the price and scale of some of these men on account of the poorness of their pitches. There are 17 men engaged stoping in the backs of the 170 north, the 160 south, the 150 south, and the 140 north and south. The ores forwarded to Puquios during the month of September amount to 320 tons; estimated 22½ per cent.

Checo Copper: The 50 cross-cut, by one man, at $11 per metre; the ground has become much harder, and the floors of clay which were crossing this point have now quite disappeared. The 40 end, driving west on the north lode, by one man, at $12 per metre; the lode maintains its size and kindly appearance, giving stones of ore occasionally. Chiflon sinking below this level, by two men, at $11 per metre; the lode is about 3½ ft. wide, composed of spar, with strings of ore running through it. We are continuing the rise above this level on the middle lode, by one man, at $18 per metre; during this month we hope to communicate here with the 30. We have two men stoping the back of the 80, and five stoping at the 40. September production 400 kilometres of 14 per cent.

Checo Silver Mine: Driving last month the bottom end east by one man, at $9 per metre, has been driven 2·63 metres; in this end there are two branches of spar, but unproductive. Chiflon sinking below the bottom level, on north branch, by one man, at $10 per metre, has been sunk 1·20 metres; this branch is about 3 in. wide, and still of no value. We are still endeavouring to extract a little ore here to meet a part of the expenditure, but our prospects are exceedingly gloomy, and I have very little hope of any immediate improvement, the veins being so very narrow and hard. Estimated value of Dulcinea September produce $20,480; expenditure, $10,500; profit, $9980. Estimated value of Checo September produce, $1320; expenditure, $1100; profit, $220: total, $10,200; less loss on silver mine, $100: total profit, $10,100.—N.B. Remittance received by this mail, 1247*l.* 4s. 4d. A further sum of about 700*l.* is on the way.

ISABELLE GOLD AND SILVER.—Foreman's report for the month of October: Advance made 243 ft.; total distance from mouth 4143 ft.; from monument 4215 ft. The formation was quite uniform in character, being unusually hard both for drilling and blasting, frequently requiring four explosions (and at no time less than three) to bring the face, whereas in ordinary ground two will do the work. There has been no unusual interruption to the regular work, and everything is in good running order.——Foreman's report for week ending Nov. 6: Advance made 53 ft.; total distance from mouth, 4178 ft.; from monument, 4250 ft. There has been no change in the formation since last report. The new cupola furnace was started on the afternoon of the 6th, proving a complete success, making 16 perfect car wheels at the first cast. Everything running as usual.

RUBY AND DUNDERBERG CONSOLIDATED.—Nov. 6: Main shaft has progressed 8 ft. this week; total below the 600 ft. level 17 ft. The 600 ft. level has advanced 14 ft. during the week; total 129 ft. from the shaft; ground has been very hard, but is getting somewhat softer. The drift from north winze, 35 ft. below the 500 ft. level, has been advanced 12 ft. during the week; total from the winze 25 ft. Ore was encountered yesterday, which is of good quality, and looks well as far as penetrated. At the drift from the winze at south stope the ore is somewhat smaller, but is very favourable looking ground. The 500 ft. south drift has been advanced 21 ft. in good ore the full size of the drift; the ore in the end of this drift at present is about 1 ft. wide. At the rise from the 500 ft. south stoping out ore has been commenced; the ore body looks well, and is from 4 to 8 ft. wide, and from 15 to 20 ft. long. The rise above the 400 has advanced 10 ft.; the ore has increased in size, but is of rather low grade. The 300 west cross-cut has advanced 6 ft.; total 302 ft. from the north drift from the old incline. At the rise above the 300 the ore continues about the same as per last report. Have shipped 90 tons of ore this week, and have 42 men at work.

— Nov. 30: Telegram received from Eureka to-day: The quantity of ore extracted during the week was 86 tons; snow prevents shipments.

BRAZILIAN GOLD MINES.—The directors have received advices from the manager, dated Caethé, Oct. 12, 1880, to the effect that on Aug. 23 operations were commenced in the jacotinga section of the company's property, and although the old workings had not been cleared, a good-sized lode of jacotinga had been met with, some samples of which showed a few specks of gold. Referring to this the manager says:—"Though insignificant, yet still encouraging, as being evidence of the formation being auriferous." At the Descoberto Mine clearing operations were carried on, and the manager states that "several lines have been met with, some showing several particles of gold in the batêa, tolerably fairly as samples, but not of sufficient importance to deserve serious attention yet." At the Matta Matta Mine "several lines have been cut, all showing particles of gold more or less in the batêa. This (the manager adds) is a very encouraging indication." He entertains strong hopes that here good stamping ground will soon be met with. Judging from the very extensive surface workings it is evident that this portion of the company's property yielded the greater part of the gold formerly extracted. A great deal of surface work has been done. Roads have been made into the woods, and a large quantity of timber has been cut adjacent to the mining werks at Matta Matta and Descoberto.

The mine captain (Capt. Truran), referring to the Servicio Velho Mine, says, "Some lines have been met with which gave very samples of gold." Speaking of the Matta Matta Mine, Capt. Truran says that the lode has been explored at several points, and every sample showed gold. The manager concludes:—"At this early stage of our operations it would be premature and imprudent to indulge in speculative opinions which may raise expectations not destined to be realised, so I shall content myself with merely stating things as they are." As at the date of these advices the old workings were not cleared, yet at each point of operation gold was met with, the directors feel confident that the shareholders must join with them in regarding the information to hand as highly encouraging.

PITANGUI GOLD.—T. S. Treloar, Pitanqui, Oct. 16: The produce obtained for the month of September, from 235 tons of ordinary mineral, an l 2 tons of veinstuff, or in all 237 tons, partly treated, amounted to 455 oits. of gold, which, valued at 8s. 6d. per oit., equals the sum of 193*l.* 7s. 6d.; the estimated cost for the same month at Exchange 23½d. (exclusive of 20*l.* 19s. 6d. expended on capital account in respect of the new stamping mill, charcoal house, and house for miners), amounted to 64*9l.* 10s: leaving an estimated loss for the month of 456*l.* 2s. 6d. Mr. Treloar remarks that while it is to be regretted that a loss should be shown for the month this result should create no uneasiness, for fluctuations are common to all jacotinga mines, more especially when the produce is dependent on one vein only. There can be little doubt that when the 15 reaches the upper part of the mine the returns will be both good and more regular. The directors have received a cable message from Mr. Treloar advising that the produce for the month of October amounted to only about 150 oits.; from this it is inferred that the raising of the ore is virtually suspended for the present, or until the Ouro Podro vein is unwatered, or the 15 reaches the upper veins, both of which may reasonably be looked for before the close of December, little or no produce may be forthcoming unless a discovery should be made in the meantime in the Bahu section of the mine.

PIERREFITTE.—Nov. 27: The manager reports as follows:—No. 1 stope over No. 1 level yields 6½ tons of lead ore and blende per fathom; No. 2 below No. 1 level, 8 tons; No. 4, 14½ tons; No. 5, 9 tons; No. 6, 8 tons; No. 7, 10 tons. The ground in No. 2 end is hard for driving. No material change in the yield of the lode in the stope in this level; the men that have been working the stope have been removed into another one. The mine looks quite as well as at any former time.

SENTEIN.—Nov. 27: The manager reports as follows: Though we have a 'o' of snow on the ground I put the cable to work and it continues going well. During the past fortnight we have brought from the mine to the dressing floors by the wire rope 450 tons of ore notwithstanding we have had several heavy falls of snow. It is my opinion that we can work the rope the greater part of the winter; we are only obliged to stop the running when we have exceptionally heavy falls of snow. With the present weather it would have been quite impossible to bring ore down by carts, as the road is completely blocked with snow. During the same period we have broken about 200 tons of ore by about 24 miners. Our No. 4 end is very good for mineral, but not quite so rich as when last reported on. The stopes are yielding ore of average quality. We commenced operations on the new dressing floors about 10 days since, and have continued dressing up to the present hard blue ore, but next week we shall begin to dress the carbonate, of which we have a large quantity here, at these floors.

ALAMILLOS.—Nov. 27: In the 130, driving east of Taylor's engine-shaft, ther is a very promising lode, producing two tons of ore per fathom. Nothing has been done in the 130, driving west of Taylor's engine-shaft, since the last report, the lode being worth 1½ ton per fathom; the men are assisting the pitman. The lode in the 115, driving in the same direction, does not contain any ore. In the 85, driving west of San Adriano shaft, the lode continues unproductive. The lode in the 60, driving east of San Victor shaft, is wider than the level, and has improved in appearance, being worth ½ ton per fathom. The lode in the 70, driving east of San Victor shaft, producing 1 ton of ore per fathom, has further fallen off in value. The lode in the 70, driving west of San Victor shaft, looks better, and is worth ¾ ton per fathom; we hope to have more lead shortly. In the 50, driving west of Judd's cross-cut, the lode has been very much increased in value, producing at present 1½ ton per fathom. Sisto's winze, sinking below the 50, is going through a good shoot of ore, worth 1½ ton per fathom. In Manuel's winze, sinking below the 60, the lode does not contain lead enough to value.

LINARES.—Nov. 24: The 115, driving east of Warne's engine-shaft, is opening up a good length of valuable ground; worth 2 tons of ore per fathom. The lode in the 130, driving east of Warne's engine-shaft, contains a few spots of ore, but nothing to value. There is no improvement in the 130, driving west of Warne's engine-shaft. The lode in the 135, driving west of Peill's engine-shaft, is very open, and of a promising appearance, producing 1½ ton per fathom. In the 120, driving in the same direction, the lode is small at present, being valued at ½ ton per fathom. The lode in the 105, driving west of Peill's engine-shaft, is moderately easy for driving through, and yielding a little ore; worth ½ ton per fathom. In the 135, driving east of Peill's engine-shaft, the lode is compact and regular, and of a promising appearance: producing 1½ ton per fathom. The lode in the 120, driving east of Peill's engine-shaft, is disarranged and unproductive. In No. 237 winze, sinking below the 120, the lode (worth 1 ton of ore per fathom) is falling off in value.—Quinientos Mine: In the 100, driving east of Taylor's engine-shaft, the lode is small, and the ground hard for driving. In the 90, driving east of Taylor's engine-shaft, there is a large, kindly lode, containing a little ore, but not sufficient to value. The lode in the 80, driving east of western boundary, is small and unproductive. In the 50, driving east of western boundary, the lode is very regular, consisting chiefly of carbonate of lime, with a few spots of ore. Judd's shaft, sinking below the 65, will be holed to the 80 in a few days.

FORTUNA.—Nov. 23: In the 120, driving west of O'Shea's engine-shaft, there is a good-looking lode, worth 1 ton per fathom. The 50, driving west of Abercrombie's shaft, is passing through unsettled ground. In the 70, driving west of San Pedro shaft, the ground is hard, and without lead to value. The lode in the 80, driving in the same direction, has improved of late, and produces ¾ ton per fathom. In the 90, driving west of San Pedro shaft, there is a large and strong lode, worth ½ ton per fathom. The lode in the 90, driving east of San Pedro shaft, is well-defined and compact, and valued at 1 ton per fathom. In the 80, driving east of San Pedro shaft, the lode produces ¾ ton per fathom, and has fallen off a little in value within the last few days. The lode in the 70, driving east of San Pedro shaft, does not contain lead to value. In the 120, driving east of O'Shea's engine-shaft, the lode has rather improved in appearance, and is worth ¾ ton per fathom. In the 100, driving east of Lownde's shaft, there is a promising lode, composed of spar and lead ore; valued at ¾ ton per fathom. The lode in the 90, driving east of Caro shaft, is large, containing good ore stuff, and producing ¾ ton per fathom. The lode in Arista's winze, sinking below the 30, maintains its size and value at ½ ton per fathom. Lopez's winze, sinking below the 70, is going down in a good lode, producing 1 ton of ore per fm. The lode in Alfonso winze, sinking below the 50, is small, with good spots of lead ore, worth ½ ton per fathom.

Los Salidos: The lode in the 175, driving west of Taylor's engine-shaft, is at present small and poor. In the 160, driving west of Taylor's engine-shaft, the lode has improved, and produces 1 ton per fathom—ground favourable. The lode in the 175, driving east of Taylor's engine-shaft, is worth 1 ton of ore per fathom, but has fallen off in value during the past fortnight. In the 160, driving in the same direction, there is a large lode, composed of carbonate of lime and lead ore, valued at 1½ ton per fathom. The 130, driving east of Taylor's engine-shaft, consists of a well defined lode, opening up rich ore ground, at 2½ tons per fathom. The 120, driving east of San Pablo shaft, has materially improved during the past few days, and produces 2 tons per fathom. The lode in the 80, driving east of Palgrave's engine-shaft, contains some good spots of ore, but not sufficient to value. Manrique's winze, sinking below the 160 east, continues good, as hitherto, opening up good tribute ground at 1 ton per fathom. Galera's winze, sinking below the 160 west, is at present poor, and without lead to value. Poveda's winze, sinking below the 130, and producing ¾ ton per fathom, is situated in the 130, east of Taylor's, and in advance of the 145.—San Anton Mine: The lode in the 45, driving east of Henty's engine-shaft, is very large, but does not contain lead enough to value. In the 30, driving east of Henty's engine-shaft, the lode has improved, and is opening up a good length of valuable ground, worth 2 tons per fathom. The 30, driving west of Henty's engine-shaft, is at present being driven on the south side of the elvan course, but nothing has yet been met with. The lode at Henty's engine-shaft, sinking below the 45, and and valued at 2 tons per fathom, is becoming more compact as we go down, and the shaftmen are working well.

BUENA VENTURA.—Nov. 24: The lode in the 40 fm. level, driving east of Cox's engine-shaft, is very open, and yielding good stones of ore. In the 50, driving in the same direction, the lode is very easy for driving through, but it does not contain ore enough to value. The lode in the 50, driving west of Cox s engine-shaft, is disordered by a cross-course. The 40 fm. level, driving west of Cox's engine-shaft, is opening up a good length of stoping ground worth 1 ton of ore per fathom. The lode in the 20, driving east of Taylor's engine-shaft, is small and unproductive. In the 20, driving west of Taylor's engine-shaft, there is a regular and well-defined lode, producing 1 ton per fathom. In Taylor's engine-shaft, sinking below the 20, and worth 1 ton of ore per fathom, the men have cut a plat for the stuff, commenced to sink the shaft, and cut ground for bearers and cistern. The lode in No. 3 winze, sinking below the 10, is small, but very compact and regular, being valued at 1 ton per fathom.

THE WEEK.

SATURDAY, NOV. 27.—While home railways were neglected a good deal of buying was indulged in of the discredited class of foreign bonds. Thus Costa Rica advanced 2; Turkish Treasury bonds, A, B, and C., 1½. A remarkable advance not less than 1*l.* took place in little Turks, which finished strong at 12½, a price not seen for many a long day before. Panulcillo continue to be largely dealt in, and to-day touched 6½. Business was also done at the same figure in New Quebrada. American shares relapsed, Erie Preference gave way 83½, the Ordinary 81⅜, and Reading shares 8¾. Illinois Central declined 81.

MONDAY.—Some speculative buyers of Rio Tinto, New Quebrada, and Panulcillo thought it best to close their accounts rather than carry over on Tuesday, being well aware that the making-up price in each case would be fixed as low as possible. Where there were so many sellers some sacrifice had to be made. Rio Tinto receded 10s., and the two others 5s. each. Home railways were easier all round. An increase of but 9 in Brighton, A, was viewed unfavourably, and the price receded 1*l.* Dover, A, gave way ⅞, and Sheffield, A, ¾. Some recovery took place in American shares. Eries rose 81¼, and Reading shares 1½.

TUESDAY.—The light contangoes charged for continuing home railway stocks encouraged a little buying for the new account, which is the last but one for the financial year of several of the railways. North-Western advanced 8½, Dover, A, 1½, and Berwick, Brighton, A, Midland, and Great Western ⅞ each. Once more Grand Trunk Firsts moved up to 99, and the Seconds to 90. The ordinary, however, remains at 24½. Mexican railways continue their surprising rise. The Ordinary have now receded 13, the First Preference 25½, and the Seconds 18½. East Caradon receded to 1½, 2.

WEDNESDAY.—Only in Brighton, A, could a further advance be established. The last price was 149¾, showing an improvement of 1¼. Dover, A, and Chatham Ordinary preceded ⅝, Great Western and Berwick ½. Mexican Railway securities again advanced. The Ordinary shares closed at 13½, the First Preference at 26, and the Seconds at 18¾. A slight relapse was observable in Trunks. Erie Shares were pressed for sale, the Ordinary falling 81¼, and the Preferred 82¼. The dealers here feared to lower prices quite to the level of those ruling at New York, in case of a reaction to-morrow.

THURSDAY.—Speculative holders of New Quebrada realised a profit of just 1*l.* per share during the account concluded to-day. Those interested in Panulcillo did even better, the shares having advanced from 4½ to 6½. Holders of railway stocks have not done over well. In only one or two instances 2 per cent. has been gained, and owing to prices having previously been much higher, in the majority of cases it has not been a clear profit. North-Western have recovered from 154¾ to 157½, Midland from 136 to 137¾, and Berwicks from 172 to 173¾. A further advance was established in Brighton, A. Eries were actively dealt in at an improvement of 81¼.

FRIDAY (*Opening*).—Little Turks maintain a firm appearance, and are being actively dealt in at 13¾, a price not seen before since 1878. Brighton, A, can still be sold at 150½; Mexican, 16 11-16 to 16 13-16; Peruvian Six per Cents., 18¾ to 19; Dover, A, 13¼ to 13½. Eries have fallen ¼, Readings are ¼ better. The dulness of the metal markets is reflected in several of the more speculative shares. New Quebrada and Panulcillo can only be sold at 6*l.*; Prince of Wales, ¾ to 1; Parys Corporation, 20s. to 25s.——*Two o'Clock.*—Prices have rather given way, in Brighton, A, the fall being most marked. Trunks continue strong, especially the Ordinary, which, after a long period of neglect, is now being actively bought. Holders of thr First Preference can get par, the seconds may be sold at 90. In December of last year the Ordinary was worth 14¾; First Preference, 67; Second, 48; and Third, 29; Ruby, 6⅞ to 7½; Richmond, 15¾ to 13⅝; Chonlales, 4s. to 6s.; Flagstaff, 1¾ to 2; Emma, 3⅞ to 4½; Consolidated, ⅜ to ½; South Indian Gold, 2 to 2¼; Devala, 2½ to 2¾.——*Four o'Clock.*—Brighton, A, have recovered to 150*l.*, but still show a fall on the day. Eries have been up to 84½, now easier. North Eastern have receded ½, Great Eastern showing no change. A rise of ⅜ has taken place in Caledonian. Wheal Crebor, 4½ to 4¾; Port Phillip, ⅜ to ⅝; Herodsfoot, ¾ to 1; North D'Eresby, 2½ to 1⅜; Yorke Peninsula Preference, ¼ to 1.

FERDINAND R. KIRK.

CORNISH PUMPING-ENGINES.—The number of pumping-engines reported for October is 16. They have consumed 1507 tons of coal, and lifted 10·7 million tons of water 10 fms. high. The average duty of the whole is, therefore, 48,200,000 lbs. lifted 1 ft. high by the consumption of 112 lbs. of coal. The following engines have exceeded the average duty:—

Dolcoath—85 in.	Millions	62·6
Mellanear——Gundry's 80 in.		52·4
West Basset—Grenville's 70 in.		51·2
West Basset—Thomas's 60 in.		51·2
West Tolgus—Richard's 70 in.		58·0
West Wheal Seton—Harvey's 85 in.		61·5
West Wheal Seton—Rule's 70 in.		63·2

CHEMICALS, MINERALS, AND METALS.—Messrs. J. Berger Spence and Co. (Nov. 27).—Alum: Loose Lump, 6*l.* 7s. 6d.; lump, 6*l.* 12s 6d.; ground, 7*l.* 5s.—Arsenic: Best white powdered, 11*l.*—Bleaching Powder, 4*l.* 17s. 6d.—Borax: Refined English, 61*l.*—Copperas: Green, 45s.—Copper: Sulphate, 20*l.* 10s.—Nitrate of Lead, 27*l.* 10s.—Nitrate of Soda: 14s.—Potash: 10¼d.—Soda: Cream Caustic, 8*l.* 7s. 6d.—Sulphate of Zinc, 10*l.* 10s.—Sulphur: Roll, 9*l.*; flour, 12*l.*—Tin crystals, 6¾d. per lb.—White lead, 20*l.* 0s.—Brimstone: Best thirds, 6*l.* 5s.—China-Clay, 39s.—Ochre, 5*l.* 15s.—Oxide of Zinc, 25*l.* 10s.—Talc, 5*l.*—Umber, 45s.—Copper: Best Ingot, 67*l.*; seconds ingot, 66*l.*—Lead: Best soft English, 15*l.*; Pig-Iron, No. 4 Forge, 39s.—Spelter, 17*l.* 0s.—Tin: British common block, 94*l.*; Naphtha Miscible, 5s.

BITUMERINE.—The entire series of carbonides or combustible minerals from asphalte to naphtha are capable of rendering under a peculiar mode of treatment a new and useful product, consisting of a solid and unctuous material or substance, which is principally obtained from the naturally or artificially viscous bitumens known as asphaltes. Bitumerine possesses, in addition to its proper elements, a part only of the other elements of the bitumen from which it is obtained, notably petrolene. It is of different colours, according to the nature and purity of the compound from which it is prepared, but by the peculiar process described by Dr. LEON LANCELOT, of Paris, which admits of its production in a state of great purity, its colour varies only from pearl white to green. The addition of caustic potash to the hydrocarburet employed imparts thereto a green tint, and at the same time solidifies it. The naphtha is driven off by heat, about 150° C., whilst the petrolene remains in the liquid. During the separation of the naphtha brilliant little globules resembling mercury will be seen to rise to the surface of the liquid, which globules are merely particles of potassium resulting from the partial decomposition of the caustic potash, the said particles, by reason of their being surrounded with naphtha, evaporate without becoming ignited. When the disengaged vapours no longer possess any odour, and have lost the caustic property imparted to them by the potash, the operation is finished. The contents of the receptacle are then turned into another vessel and left to cool, whereupon the potash, if it has been used in excess, sinks to the bottom in the form of a residuum of hydrated potash, which is removed when the said new product is still sufficiently warm to remain liquid, or at a temperature of about 50° C.; after it has completely cooled down the bitumerine will be found in a solid form. The potash removed in the form of a residuum is transformed into caustic potash, and may be re-employed in a fresh operation, hence, by this process everything is utilised, and no useful material is lost. When sufficiently pure mineral hydrocarburets are used the bitumerine obtained therefrom is white; with impure materials its colour, owing to the use of the potash, is never darker than green, and consequently there is no necessity for decolouring or purifying it; if, however, it be desired to obtain it in its greatest state of purity it is sufficient to filter it through animal charcoal, and in this case the quantity of charcoal to be employed is relatively small by reason of the faint colour of the product. The advantages claimed for the process are that it is rapid, that the useful products of distillation are collected, that one of the accessory products—the potassium—is of considerable value, thereby reducing the cost of manufacture, and that the hydrocarburets used are among the least costly.

HOLLOWAY'S OINTMENT AND PILLS combine both sanitive and sanative powers to a high degree—by the former term is understood their ability to preserve health, by the latter their capability to restore health. With those remedies at hand, no invalid need be at fault to guide himself or herself through the many trials to which everyone is subjected during our long and oftimes inclement winter. Coughs, colds, ulcerated throats, whooping-cough, can be successfully treated by rubbing this ointment upon the chest, and by taking the pills during damp, foggy weather asthmatical sufferers will experience the utmost possible relief from the inunction of the ointment, and all tender-chested persons will save endless misery by adopting this treatment.

THE PHOTOPHONE.

Marvellous as the telephone and the phonograph appeared (especially to those who had failed to keep themselves closely read up in the progress of electrical science) when first discovered and exhibited it will probably be considered by many that the Photophone, which formed the subject of a highly instructive and interesting lecture by Professor Alex. Graham Bell at the Society of Arts, on Wednesday evening, is a still more marvellous discovery. Mr. Graham Bell being known to everyone as the inventor of the telephone, coupled with the fact that he occupies a distinguished position in the world of science, will readily account for the crowded state of the large theatre on Wednesday evening, although the precaution had been taken to prevent inconvenience as far as possible by excluding even members unless they were fortunate enough to obtain special tickets before-hand. As most people have seen and used a telephone, it will probably render more intelligible the description which will presently be given if it be first stated that in principle the photophone may be said to correspond with a transmitting telephone, in which the diaphragm is made when vibrating to pass varying rays of light, combined with a receiver in the form of a parabolic reflector, so arranged as to collect the light rays disturbed by the transmitting instrument, and throw them upon the selenium coil, which is so sensitive to light that its vibrations so accurately corresponding with the original disturbing force are applied as to reproduce the very voice which set the transmitting diaphragms in motion. Thus it is truly said that audible utterances are conveyed to a distance with a ray of light alone as the carrier.

Well might the learned Professor remark, in introducing the subject to his audience, that the facts of science were often more marvellous than the imaginings of fiction, and an illustration of that was being able to make light a medium for the communication of sound. Being able to talk along a beam of light as one talked through a speaking tube seemed at first sight too marvellous for comprehension; but everything was easy when you knew how to do it; and it was his object to explain the *modus operandi* of producing the sound of articulate speech at a disrant place by the simple agency of a disturbed sunbeam, or ray of other light. He reminded his hearers that selenium was discovered by Berzelius in 1817, although it had really been nothing more than a scientific curiosity until 1871. In February, 1873, his assistant—Mr. May, and Mr. Willoughby Smith, had discovered that that rare and curious element selenium had its electrical resistance affected by light. Berzelius, the discoverer of selenium, found that it was a non-conductor of electricity; but in 1871 it was found that selenium became a conductor when it had been fused and slowly cooled from the fusing point, when it is found to have assumed a crystalline condition and to be a conductor of electricity at ordinary temperatures. Mr. Willoughby Smith had utilised selenium on account of its enormous resistance to electric currents in his method of testing during the submersion of submarine cables, and it was while experimenting on the Atlantic cable at Valentia that he had made the discovery that the electrical resistance of this subject is affected by light.

To explain the action of the photophonic transmitter and receiver precisely would be extremely difficult, if not altogether impracticable, without the aid of diagrams; but it may be stated that the transmitting disc is one form a double diaphragm, so perforated that the slightest disturbance of either or both varies the quantity of light permitted to pass through, this variation being accurately recorded upon the receiver, provided the rays passing through the transmitting disc be sufficiently powerful. It was rather unfortunate that on Wednesday evening no electric light was available, so as to permit of the actual reproduction of the living voice; but the diagrams and apparatus were so ample that all could readily comprehend the prineiple. After explaining various forms of apparatus in which the peculiar properties of selenium were utilised; including the selenium eye invented by Dr. Siemens, of Berlin, and which has been for several years in the South Kensington Museum, Professor Graham Bell referred to several which were the joint production of himself and Mr. Sumner-Tainter, of Washington, some of the latter being so successful as to reduce the resistance from many millions of ohms to 350 ohms in the dark, and to 150 ohms in the light. The form, however, of selenium receiver which appeared to give the best results consists of a number of thin brass discs separated by mica plates of somewhat smaller size, so that a series of grooves between the discs is formed when the pile is screwed up, these annular grooves being filled with fused selenium, and the odds and evens so connected that when the wires are connected with the poles of the battery the current can only pass by passing through the selenium rings. This arrangement is placed in the focus of a parabolic reflector, so that the beam of light bringing the sound can be caught and condensed on the cylinder, and conducted to an ordidinary telephonic arrangement.

Professor Adams, he said, had shown that the resistance of selenium was reduced in the same proportion as the intensity of the light falling upon it. That had suggested to him (Professor Bell) that by varying the intensity of the light falling upon selenium and observing its conductivity, not by means of a galvanometer but with a telephone, it might be possible to produce sound from the telephone by light in a manner precisely analogous to producing sound by electrical conduction. This anticipation had been realised, but in the same way that no sound is produced by passing a continuous steady current of electricity through a telephone, so it was only in proportion to the variation in the intensity of the beam of light let fall upon the selenium connected with the telephone and galvanic battery that audibility was apparent. He described the two most successful forms of apparatus he had devised to enable the voice to control the intensity of the beam of light, by means of which he and Mr. Tainter had succeeded in carrrying on a conversation at 280 ft. distance. A curious fact of articulation, however, had been noticed, reminding him of the early form of telephone brought out in 1876, that while the vowels were accurately reproduced, the consonants were indistinct. Thus, he had understood his friend to say "Good piece of bread" through the photophone, when the actual actual words were, "Put me to bed," the vowel sounds in the two sentences being the same, though the consonants were defective.

Many of the experiments shown were particularly striking, and explained not only how the defects referred to were remedied, but how the transmitting diaphragm really acts. He transmitted the photophonic image, or image of the transmitting diaphragm, to the screen, and thus distinctly showed the nature of the beam which reached the receiver according as the transmitting diaphragm was made concave or convex by the act of breathing upon it, as well as the varying rays produced by the sounds of the numerals from 1 to 20. No attempts, he said, had yet been made to reproduce speech at a greater distance than 800 ft., but at that distance in Washington he had heard perfectly a message transmitted by Mr. Sumner-Tainter. In the course of reducing to practice the idea of the photophone he had been led to a discovery of the greatest possible interest to the scientific world. In the course of their experiments it occurred to Professor Bell and Mr. Sumner-Tainter that as a molecular vibration or disturbance produced in a rod of iron by the magnetising influence of an intermittent electrical current sent round it could be observed as sound by placing the ear in direct contact with the rod of iron, it was probable a molecular disturbance of any kind, however produced, could be heard in like manner. They therefore directed an intermittent beam of light on their solenium through holes in a rotary disc, and discovered that sound was emitted. The interposition of the hand stopped the sound, but, to their surprise, a piece of hard rubber which chance led them to interpose did not entirely stop it. They then found that the intermittent light directed on the rubber alone produced sound, and subsequently all the substances they tried in the shape of small diaphragms, including even paper, emitted musical sounds under the action of the intermittent beam of light. Since he had arrived in Europe he had filled test tubes with various things, and found that from them all, with the exception of water and chlorate of potash, musical tones could thus be produced. "A cigar emitted a musical tone. At the Royal Institution Professor Tyndal had suggested to him that he should fill the test tube with an absorbent gas. A distinctly audible tone was produced. He concluded with congratulations that a field for experimental research had been opened up to scientists, the boundaries or results of which it was at present impossible to foresee.

At the request of the Chairman, Dr. C. W. Siemens, F.R.S., then described the construction and demonstrated the sensitiveness of the selenium eye invented by his brother. It is in the form of a ball, the front opening like eyelids, whilst the back is furnished with a selenium receiver, which can be readily put in communication by means of wires with a galvanometer. The room was well illuminated with gas, but this was of course a very inadequate light for so delicate an instrument; nevertheless the sensitiveness was clearly shown. Upon opening the eye to a black screen the deflection of the galvanometer was scarcely discernible; with a green screen the deflection exceeded 20°; a red screen deflected the needle 30°, and white 50°. Professor Graham Bell's lecture was most attentively listened to throughout, and at the conclusion the great applause and hearty and unanimous vote of thanks given him must have fully convinced him that both his great discovery and his manner of explaining it were appreciated by all.

MINING EXHIBITS AT THE BRUSSELS NATIONAL EXHIBITION.

We cannot allow this remarkable demonstration of a small but enterprising nation's progress and activity to pass by entirely without a cursory review of the most noteworthy objects from the mining engineer's point of view, especially as Belgium is, next to our own country, the foremost in mining practice, while at the same time being, according to its area, among the principal as regards mineral wealth. The Exhibition formed part of the national *fetes* organised to celebrate the fiftieth year of Belgian independence, and was intended to afford occular proof not only to the inhabitants of the small but densely-populated kingdom but also to neighbouring nations the great advance that has been made in art, science, and industry during these 50 years of peace, liberty, and prosperity. Unfortunately a mistake was made in allotting too small a space to the mining and metallurgical exhibits, so that they were not seen to such great advantage as would otherwise have been the case.

The Mining Exhibits came under the second section, Industry, and the first group, Mining Industries, classes 31, products, and 35 plant, of the working of mines and metallurgy, being those which included the principal objects of interest to our readers. The Commissioner of the section was Count Adrien Oultremont, a member of the executive council, and among the managing committee was the name of the late A. Waroqué, Member of the Chamber, owner of the Manimont and Boscoup Mines, and inventor of the "Waroquière," or self-acting arrangement, by which the miners ascend and descend the shafts without fatigue, by merely stepping from one platform to another as they come opposite each other during the reciprocating movement given by the engine. The president of the 31st section was M. Delloye-Mattien, and the vice-president M. J. L. Trasenster, professor at the Liége University, M. A. Habets, lecturer on mining at the Liége University, being the secretary. Among the members of the committee were M. Julien d'Andrimont, senator and owner of the Hazard Collieries, near Liége, M. Paul Davreux, engineer at the Musée de l'Industrie, Brussels, M. Guibal, professor at the Mons School of Mines, and inventor of the fan bearing his name, M. Vanscherpenzeel-Thim, Director of Mines for the Liége district, and M. Emile Harze, Director of Mines for the kingdom, on whom a large portion of the actual work devolved.

We find from the table attached to the official catalogue that the following quantities of the various ores were raised in Belgium during last year:—

	Tons.	Value.
Blende	23,229	£ 55,040
Calamine	19,460	30,760
Galena	9,384	43,480
Pyrites	15,577	12,960
Iron	191,512	62,320
Total		£204,560

This sum, added to 5,799,800*l.*, the value of the 15,447,292 tons of coal raised in the kingdom during the year 1879, makes 6,004,330*l.*, representing the annual raw mineral wealth of the kingdom, though during the years 1874 and 1875 the exaggerated price of coal brought up the returns to a considerably higher amount. The metalliferous mines have between the years 1840 and 1880 produced ore to the value of 15,962,000*l.* During the period from 1853 to 1873 they were particularly active, but the working out of some deposits, the increased cost of working as a greater depth was reached, the high royalties paid to the proprietor for surface ore, the competition of foreign ores, and especially the oolitic iron ore of Luxemburg, and the commercial crisis of the past few years, have reduced this industry to less than half the importance it had acquired in 1865.

The Austro-Belgian Company had on view a fine mosaic composed of its Corphalic ore, and also some zinc ingots obtained principally from its foreign ores. The Nouvelle Montagne Company, founded 30 years ago, presented a very interesting collection of the ores which it works at Engis. These mines are the most important of any on the banks of the Meuse. In the upper portion of its sulphurated deposits the ore was oxidated, and consequently consisted of calamine, limonite, and carbonate of lead. Very fine petrifactions are met with, and also fossils, the excellent preservation of which proves the aqueous formation of the ore. The Bleyberg Company, of Muntzen, in the province of Liége, sent some samples of its superb deposit of lead, one of the finest in Europe. This ore is worked on a large lode in contact with the coal basin—in fact, a vein from the lode invades the coal seams. This is, we believe, the only instance of a metallic vein occurring in the coal measures. The galena is often pure, but sometimes associated with blende, and it is the pure ore which, under the name of Alquifova, is supplied to the famous glass-works of Baccarat, in France, from which establishment two crystal vases, made with the aid of this ore, graced the stand. The lead ore, much more argentiferous than that on the banks of the Meuse, is cupellated at the works for extracting the silver, this being the only establishment in Belgium where this industry is practised. The stand contained a mass of silver obtained in this manner, valued at 1000*l.* The company also exhibited some zinc and lead pigs. The Vieille Montagne Company showed in their special pavilion an immense block of their fine calamine ore from the celebrated Moresnet lode in Belgium, and another, polished, in the form of a basin. This company is using every endeavour to apply zinc to as many purposes as possible, and had collected together samples of all the various applications, including paints with a zinc base, which is far less injurious than one of lead. The Paris house of Œsger Mesdach and Co. showed some zinc blendes, and also the products of their important zinc works at Ougrée. M de Lammine, of Liége, sent some ingots run at his zinc works, near Hury. The Société Minière Belge de Vigsnoes exhibited, on a picturesque rock work composed of blocks of ore, various samples of their manufacture. They treat copper ore from their mines in Sweden at their works near Antwerp, this being the only Belgian company that works up copper ore. M. Emile Colle sent some lead, copper, and iron ores, and also a collection of rocks from the provinces of Namur, Liége, Hainaut, and Luxemburg. Samples of their iron ore were sent by nearly all the large iron companies of Belgium, including those of Cockerill, Ougrée, Marcinelle et Courllet, Forêt and Monceau-sur-Sombre. M. A. van Eetvelde, of Molle, near Antwerp, sent some specimens of campine surface ore, which is phosphoric. Only one iron mining company which is not at the same time engaged in the iron manufacture, La Société des Mines de Landenne-sur-Meuse, at Sclaigneaux, exhibited specimens of iron ore. This is the oligist which constitutes the chief mineral wealth of the province of Namur, being a stratum which encloses the coal measures; it contains about 45 per cent. of metallic iron, but at a certain depth it becomes pyritic. Analysis gives the following results:—

Iron	50·20	Lime and magnesia	4·95
Silica	10·12	Sulphur	0·17
Alumina	5·98	Phosphorus	0·40

Besides being supplied for smelting, this ore is largely used for lining puddling furnaces, when it hastens the decarburisation of the pig, the phosphorus passing almost entirely into the cinder.

Samples of raw coal were very numerous, the Union des Charbonnages et Mines de Liége contributing some large blocks from the Paradis Colliery, and the Ougrée Company contributed some samples which on analysis yield the following results:—

Ash	13·8	Phosphorus	0·045
Sulphur	0·603		

The mechanical preparation to which this coal is subjected further removes from it 49 per cent. of ash, 50 of sulphur, and 39 per cent. of phosphorus. The coal of the La Haye Colliery Company, Liége, is good as bituminous and semi-bituminous, but, like all the coal of this district, is unsuitable for the gas retort. The Hazard Colliery Company sent some products of a classification and washing, the contents of ash in the washed grains or fine being reduced to 4 or 5 per cent. This company erected a trophy of their "briquette," or patent fuel, showing the varying and generally progressive quantities of coal from the time they began to work the colliery, 27 years ago, until the end of last year. The first year's output is represented by a 2-in. cube, and that of 1879 by the base of the structure, 10 ft. square and 9 in. high. The successive layers also bear figures representing on one side the production in tons, on another the value, on the third the number of hands employed, and on the fourth the amount of horse power of the engines. The Société civile des Charbonnages re'unis da la Minerie sent an interesting diagram showing the fluctuations of its output, which has never been large, though the colliery has always been worked to a profit since 1830.

The Houillères-Unies of the Charleroi Basin, in Hainaut, showed samples of raw coal and artificial fuel of various forms. The Re'union Company sent specimens of coal and coke, and also plans of a central screening arrangement. In the Centre Basin the coal of the Association Charbonnière due Centre Sud merits attention as showing the following results:—

Coke	69,425
Volatile matters	27,425
Ash	3,150=100,000

This small quantity of ash, exceptional in Belgium, is only shared by the Andalues Company, the coal of which is very similar. The coal of the Rieu, Cœur et Boule Colliery, at Quaregnon, in the Couchant du Mons, appears suitable for gas making, as actual working shows a yield of 9350 and 9880 cubic feet of gas per ton. The Société des Virgt-quatre Actions, in the same district, have obtained 12,000 and 13,000 cubic feet per ton in a laboratory experiment. The Belle-et-Bonne Company sent some coal of a fibrous texture, splitting into diamond-shaped pieces. The Bernissard Company, whose seams are at the extreme north of the basin, contributed some interesting fossils.

The Cockerill Company exhibited a magnificent block of coal, 3 metres long, 1·1 metre wide, and ⅔ metre thick, from the "houilleux" seam of their Marie Colliery. The coal is described as three quarter bituminous, and yielding 50 per cent. of large; it is found suitable for forges and puddling furnaces, and vaporises nine parts its weight of water; they also showed some coke made from a coal supposed to be unsuitable for the purpose, but after treatment in the Lucop disintegrator, which they have improved, the Produits du Flénu Company showed some coke obtained by their system which permits of the valuable sub-products being saved.

The Department of Public Works exhibited a collection of the "Annales des Travaux Publics," and also the first sheet of the Geological Map of Belgium, to the scale of 1-200,000th, representing the province of Liége. It is apparent from the section that the strata in the north part of the Liége coal basin are tolerably regular and horizontal, and then rise in a series of contortions caused by the large fault known as the "Faille Eifélienne." The same thing occurs in the eastern portion, but here the fault is less considerable; it raises a portion of the measures to the south without, however, causing them to disappear. A similar map of the Charleroi Basin appeared in the Department of Cartology; it represents a horizontal section taken 150 metres below the sea level at Ostend, and is accompanied by six vertical sections taken on equi-distant planes from north to south, which show that the strata, like those of the Liége district, are regular towards the north, and contorted towards the south. The basin is deeper than at Liége, some of the seams being more than 2000 metres from the surface. M. Malherbe sent an interesting geological map, showing the continuation of the strata between Germany, Belgium, and Holland, by which it appears that an important coal deposit exists in Dutch Limburg. M. Squalard, engineer, contributed an ingenious section of his invention for facilitating the plotting of underground workings. M. Max Goebel sent the latest edition of his useful and instructive map of Belgium and the neighbouring countries, showing the production, consumption, and circulation of coal in the kingdom, and M. Firket contributed a similar map as to ores in Belgium. M. Charles Demanet put on record his Treatise on Coal Mining, and there was a complete collection of the valuable "Revue Universelle des Mines," published by M. A. Noblet, Liége, from 1857 to the present time.

Plans and sections of underground workings, and diagrams of production during successive years, were exhibited by most of the large mining companies, and were, as a rule, beautifully got up. The Horloz Company, who own one of the most important collieries in the Liége district, showed a fine section of their workings, in which there are several seams varying in thickness between 2 and 4 feet. Photographs were shown of the ingenious arrangement by which they were enabled to penetrate the gravel of the Meuse by means of compressed air. The Pont de Loup Company exhibited a geological section and a model showing the contortion of their measures. The Ormont Colliery Company, Châtelet, sent a section of their measures and a plan of the arrangement of their St. Xavier Pit. A section was also given of the Poirier Colliery, Charleroi; this is interesting because the mine is worked at a greater depth than any other in the world - 940 metres (514 fms.) A shaft of the Viviers Unis has been put down by way of trial to 1050 metres, but working does not take place at so great a depth as at the Poirier. It appears from the section that the lower measures are not so much disturbed as the upper, and the quantity of fire-damp has not increased with the depth, though a more powerful ventilation is rendered necessary by the higher temperatures. The Levant du Flénu Company sent, among other drawings, a section of their rich deposit. The Marihaye Company, which was the first to use the Dubois and François system of boring, exhibited a striking section showing the run of their strata. The Union des Charbonnages et Minos de Liége contributed diagrams of the production of coal and ore in the district, and the diagram showing the development of the coal industry in the province of Hainaut also claims notice.

The Gold Mines of Nova Scotia.—A Halifax Correspondent writes that there is at present a great excitement in Nova Scotia about the gold mines, chiefly because that at Montagne, discovered by Mr. D. Touquay, and sold by him to some other practical miners about twelve months since, is turning out very rich. Last August they turned out a brick of melted gold, weighing 800 ozs., from about 90 tons of quartz. This bar of gold was obtained at a cost of not more than 300*l.* sterling, so that the mine is recognised as a first-class enterprise. They are now down about 200 ft., and say the mine is looking as well as ever, but they have struck a stream of water, which has rendered it necessary to put in a larger pump, and get another steam-engine. It appears that they have taken out of the mine since they bought it nearly 10,000*l.* sterling worth of gold, whilst the total expense of getting the same has not exceeded 3000*l.* sterling. This has caused many capitalists and mining men from the United States to turn their attention to Nova Scotian mines. The Evening Mail (Halifax) of Nov. 16 reports a find of gold in the Cariboo district near the head of Moose River by Mr. Wm. Bruce, of Musquodobort. He accidently struck in the woods a boulder, a foot long, 10 in. wide, and 7 in. to 8 in. thick, which yielded a lump of gold and amalgum weighing 5½ lbs., and estimated to be worth $1600. The lode from which this boulder originally came has not been as yet discovered, but Mr. Bruce has taken up several acres in the vicinity, and intends prosecuting a vigorous search for it. When found, if it at all resembles the specimen noted here, it will probably be the richest gold field in the province. That the man had over 78 oz. of melted gold is beyond doubt; but as he is alleged to have crushed the boulder and retorted the gold himself, some of the statements as to source, &c., may be taken with reserve.

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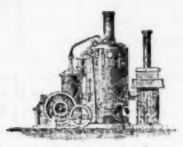

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BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,
Mining Engineer, Wakefield.
(Formerly Student at the Royal Bergakademie, Clausthal.)

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GENERAL THEORY OF PISTON VENTILATORS.

In the case of double acting piston ventilators the theoretical amount of air drawn through the ventilator per minute is equal to the area of the piston multiplied by the velocity of the piston per minute. On account of leakages, and the dead space at the end of the cylinder, the actual quantity of air passed through the ventilator is less. The ratio of the actual to the theoretical amount of air is called the wind effect. This varies, as we have seen, for wooden cylinders, where the stroke of the piston is from one-fourth to three-fourths the diameter of the cylinder, from ·85 to ·9, and in the case of iron cylinders the wind effect is about ·9. In designing a ventilator, therefore, the actual ventilation required per minute must be divided by the wind effect, and by the piston velocity per minute, to obtain the area of the piston or pistons. The velocity per minute of the piston of the ventilators is usually taken at 200 ft.

The theoretical horse-power required to drive the ventilator is equal to the quantity of air passed through the ventilator per minute, x by the drag in inches, × 5·19 lbs., and divided by 33,000. As we have seen, owing to the resistance chiefly of the valves, the actual horse-power required is much greater than the theoretical. The ratio of the theoretical power, or, what is the same thing, of the power usefully employed in directly producing the ventilation, to the power actually required is called the useful effect. According as we calculate the useful effect for the quantity of air theoretically passed through the ventilator, or the amount measured as actually passing through the ventilator, we may have the theoretical useful effect, or the actual useful effect; the latter can be immediately deduced from the former by multiplying theoretical useful effect by the wind effect.

The wind effect becomes greater the less the drag given by the water guage; and, *vice versa*, the wind effect becomes lesss the greater the drag given by the water guage. Suppose, for illustration the case of a double acting vertical piston ventilator—say one of Struve's. During the down stroke the air beneath the piston will be under a greater pressure than the outside barometric pressure, the excess being necessary to keep open the outlet valves. At the end of the stroke the dead space will be filled with air of a greater density than the air outside the ventilator. For the same reason the air beneath the piston during the upstroke will be under a less pressure than that in the upcast shaft. Supposing the difference to be 1·5 in. during the commencement of the up stroke, therefore, no air will be drawn in beneath the piston until the pressure of the air in the dead space has sunk to 1·5 in. (*i..e*, of the water guage) below that in the upcast shaft. Consequently the air actually exhausted from the mine is less than the theoretical, but approaches it more nearly the less the difference between the atmospheric pressure and the pressure of the air in the upcast shaft. As illustration it may be cited that in the case of blast engines, where the water guage reading reaches from 5 in. to 7 in. the wind effect is between 60 and 70 per cent. In the case of ventilators for mines we have seen that the wind effect varies from 85 to 93 per cent., with water guage readings of 1½ in. to 3 in.

Again, the useful effect of a ventilator increases or decreases with an increase of the water guage reading. This will be evident from the following considerations. Suppose, as above, the case of Struve's ventilator, and that during the upstroke the air above the piston has the pressure, as given by the water guage, of 1 in. above the atmospheric pressure, and that the pressure below the piston is 1·5 in. below that in the upcast shaft, which shows a drag of 2 in. on the water guage. Then the pressure on the upper side of the piston is 1 in. above the atmospheric pressure, and the pressure on the underside of the piston is 1·5 + 2 in. less than the atmospheric pressure. Consequently the pressure on the upper side of the piston is 4·5 in. greater than that of the underside. This corresponds to the total work required to produce the ventilation. Of the above the 1 in. and 1·5 in. are necessary to overcome the resistance of the valves, and the 2 in. only represents the work actually performed in producing the ventilation. The proportion of 2 in. to 4½ in. is the useful effect of the ventilator. Since the values of 1 in. and 1·5 in. remain approximately the same for any change in the water guage reading in the upcast shaft, the ratio of this latter to the sum of all the three readings (*i.e.*, the useful effect becomes greater as the water guage reading in the upcast shaft becomes greater, and less when the water guage reading becomes less. In other words, the useful effect increases with an increase of the water guage reading, and decreases with a decrease of the water guage reading.

The useful effect of the best arranged piston ventilators we have seen amounts in the case of the Maribave ventilator to nearly 40 per cent., and in the case of badly arranged valves does not amount to much more than 25 per cent. In the case of the ventilator at the Victoria Colliery, Belgium, the useful effect of which may be taken at 30 per cent., 16,450 cubic feet of air were drawn through the mine per 1 lb. of coal burnt. Assuming the useful effect of a well designed piston ventilator at 40 per cent., we obtain in this case about 22,000 cubic feet of air drawn through the mine per 1 lb. of coal burnt, against 12,000 cubic feet of air as given by furnace ventilation.

CENTRIFUGAL VENTILATORS.—Centrifugal ventilators, or fans as they are more generally called when not applied for ventilating purposes, consist of a wheel provided with blades, which is made to rotate within a casing, having an inlet near to or at the axis, and an outlet opening in a tangential direction on the circumference. The air is drawn in at the axis, and driven off at the circumference. According as the inlet or outlet or outlet opening is connected with the air pipe or channel the fan works as an exhaust pipe or a compressor fan.

Although, perhaps, the simplest in their construction of all ventilators, a great difference yet exists in the various theories now put forward to explain the working and the proper mode of construction. An examination of the construction of many centrifugal ventilators will show that their action is not due entirely to centrifugal force. To the difference in the various theories put forward is due the great difference in their construction. The limits of a newspaper prevent us following mathematically the theory of the various ventilators, so that we here only point out in general terms the results of the various theories, considering first the construction of the various ventilators.

The earliest use of fan ventilators for mines appears to have been for ventilating single places, and consequently the ventilators were so small as to be moveable, and were worked by hand. In consequence also of the greater ease with which the air pipes could be connected with the delivery part of the fan than with the inlet opening in the neighbourhood of the axis, these small fans were mostly used as compressor ventilators.

Perhaps the oldest centrifugal ventilator is that of Coombes, which since its introduction in 1841 at the No. 5 pits of the Grand Hornu Colliery has undergone several modifications. The first design consisted of a vertical axle carrying a horizontal circular disc; below it an annular disc or ring. The diameter of the large disc was ·85 meters, and the outside diameter of the annular disc ·85 meters, the inner diameter being ·68 metres. Between these two discs 12 vanes were attached. The vanes were ·35 metres broad or deep, and met the inner circumference at an angle of 19½ degrees, but ended tangentially with the outer circumference. Of the 12 vanes, however, only four passed through the centre of the apparatus. A great number of guiding curves were provided to distribute the air in the best manner into the vanes. As the ventilator did not give satisfaction, the number of curved vanes was reduced to six, and were made to start from the inner circumference at an angle of 15 degrees with the tangent at the circumference; and, lastly, the number of vanes was reduced to three, and the above angle to 6 deg. 40 min.

The first constructed ventilators were placed with the axis vertically above the mouth of the pit, and in order to make it work airtight a vertical hoop of sheet iron was attached to the under side of the annular ring, and dipped into an annular channel containing water, the channel being built in with the brickwork at the mouth of the shaft. In the later designs the water channel is left out. The ventilator revolved at a speed of 550 revolutions per minute, and exhausted 5000 to 9000 cubic feet per minute. The useful effect has been estimated at as much as 36 to 39 per cent. These are most probably greatly in excess—according to Ponson cannot be much greater than 15 per cent. One of Coombe's ventilators, with an horizontal axis, was erected at the Sauwartan Colliery, and so placed that the air from the upcast obtained access to the middle of the fan on both sides. This ventilator appears to have been designed to cast off the air from the circumference at the minimum velocity, and it is on this account that the ends of the vanes are made tangential to the outer circumference. Theoretically, however, this is not the correct angle, as it supposes the radial velocity to be zero, which is practicably impossible. Rittenger has demonstrated in his theory of ventilators that the smallest periphery velocity is required when the ends of the vanes are radially placed. The ventilator at Sawartan gave a useful effect of 27 to 29 per cent.

Schwamkrug's ventilator consists of a fan having six straight radial vanes. The fan is 28 ins. in diameter, the vanes 8 ins. by 8 ins., and is driven by hand at a high speed, through the intervention of gearing. The spur wheel on the axle of the fan is provided with 12 teeth, the hand wheel has 102 teeth. The fan is enclosed in an iron casing, made in two halves, which is circular in shape, but in which the fan is placed eccentrically. The inlet pipe is cast on the casing opposite the gearing, and admits the air to the centre of the fan round the axle. The delivery pipe, which is cast half on each half of the casing, is 7 ins. by 8 ins. in section. The chief peculiarity of this ventilator consists in placing within the casing three sheet iron guides spirally with regard to the fan, so as to form curved delivery pipes for each quadrant of the fan, and thus enable the fan to throw off the air at any portion of the circumference, and not necessarily to have to carry the air round with it, till opposite the delivery opening. The air channels formed by these guides increase from ¾ in. by 8 in. to 2 ins. by 8 ins. This ventilator can be used as a compressor or exhaust ventilator, and, as is evident from its size, is intended only for use in headings or single places.

Gallez's ventilator is very similar to Coombe's as far as regards the construction of the vanes, which end tangentially to the outer circumference of the fan, and make an angle of about 80° with the tangents and the inner circumference. The air is guided into the space between the veins by means of sheet-iron radial guides. The vanes strike the air on their convex side, as in Coombe's ventilator. This ventilator is driven direct by a vertical engine, and is surrounded by a brick casing, spiral in section, with the aim of allowing the fan to throw off air from any part of the circumference. The fan is 28 ft. in diameter.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath Dr. Von Groddeck, Director of the Royal Bergakademie, Clausthal, The Harz North Germany.

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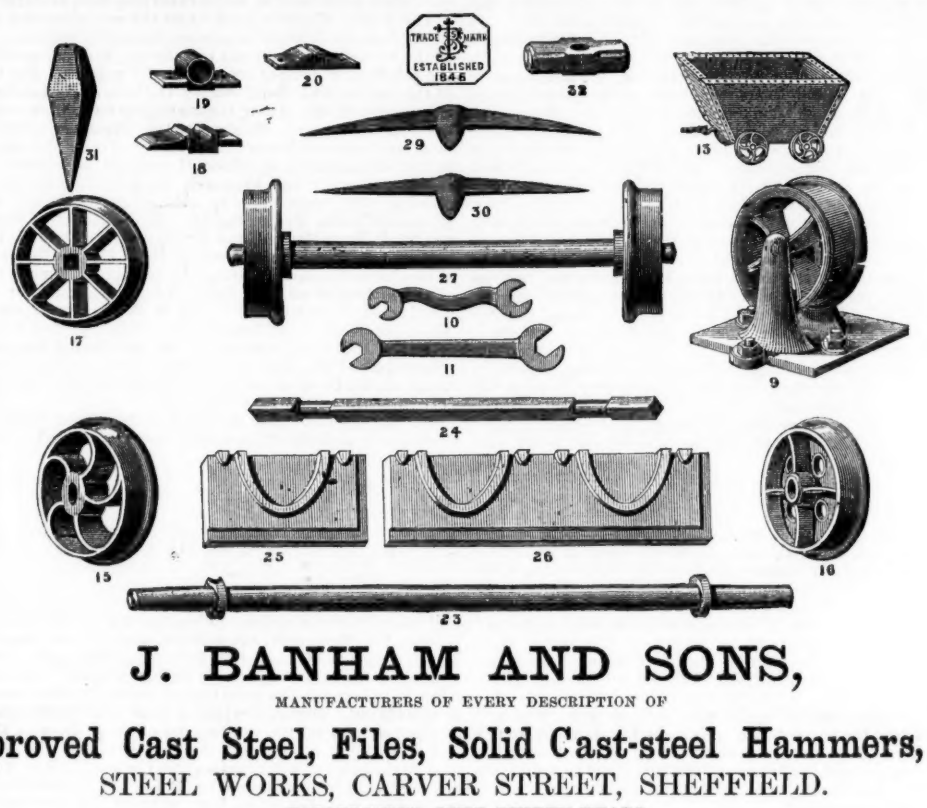

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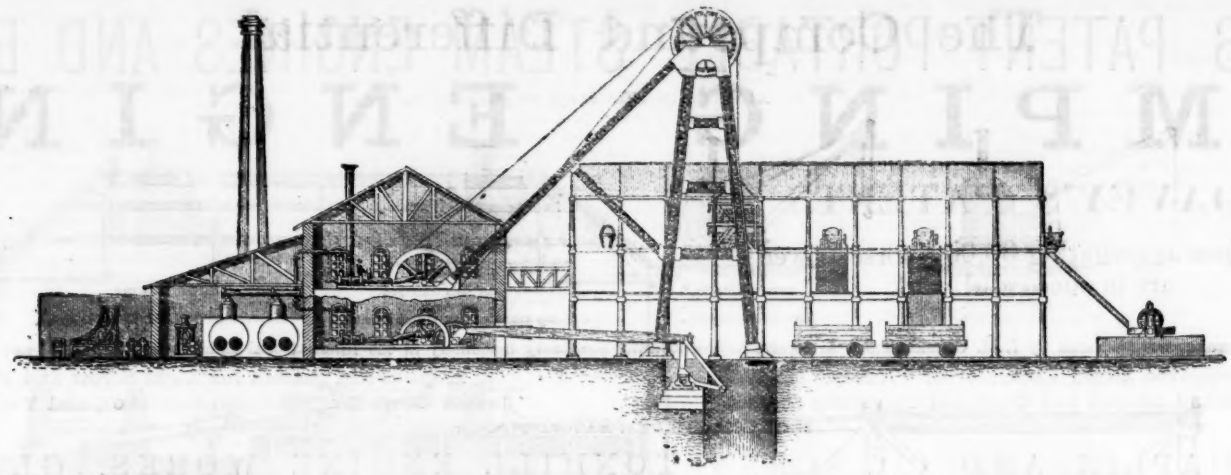

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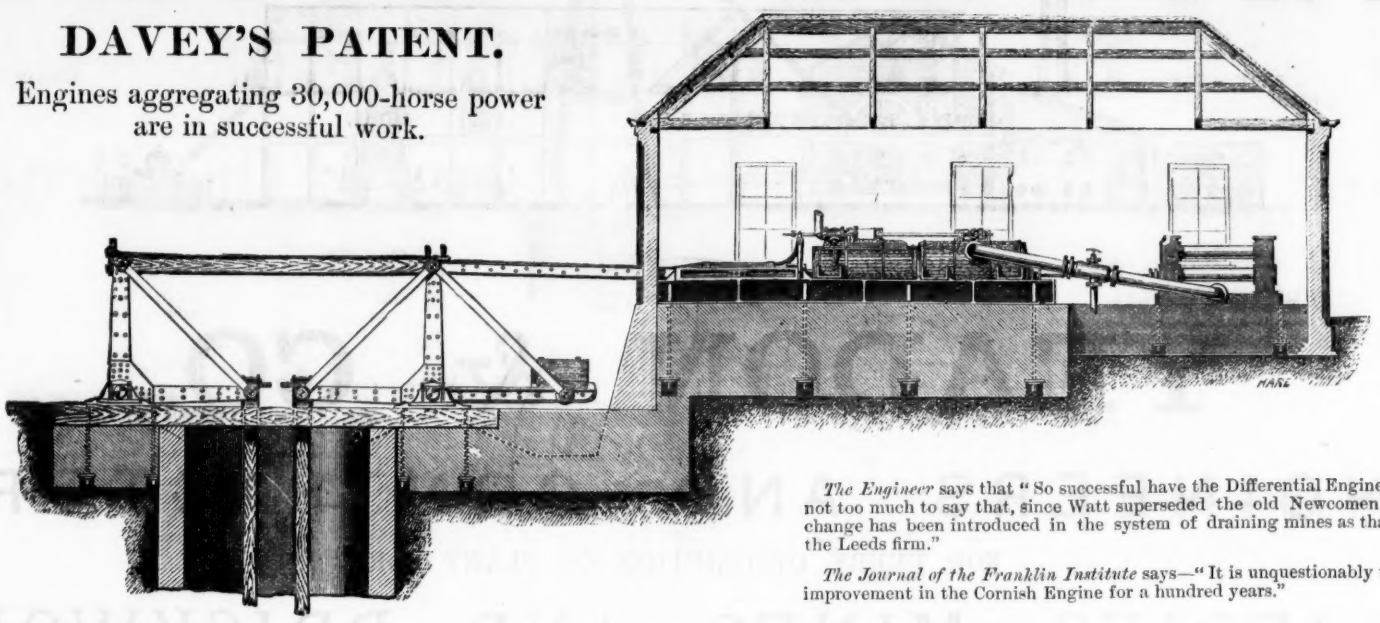

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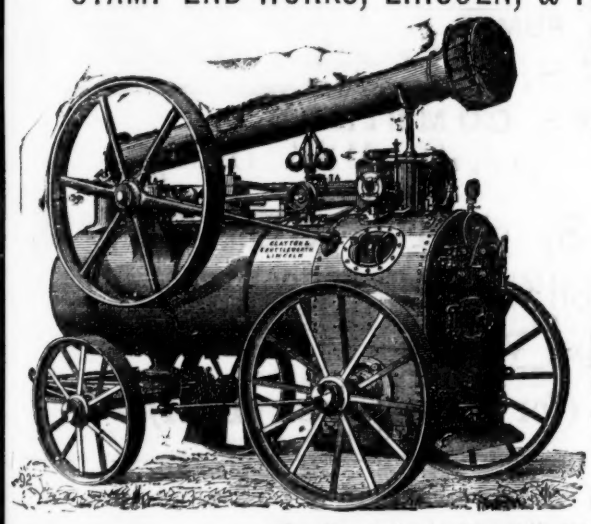

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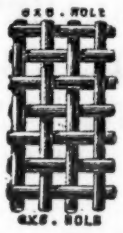

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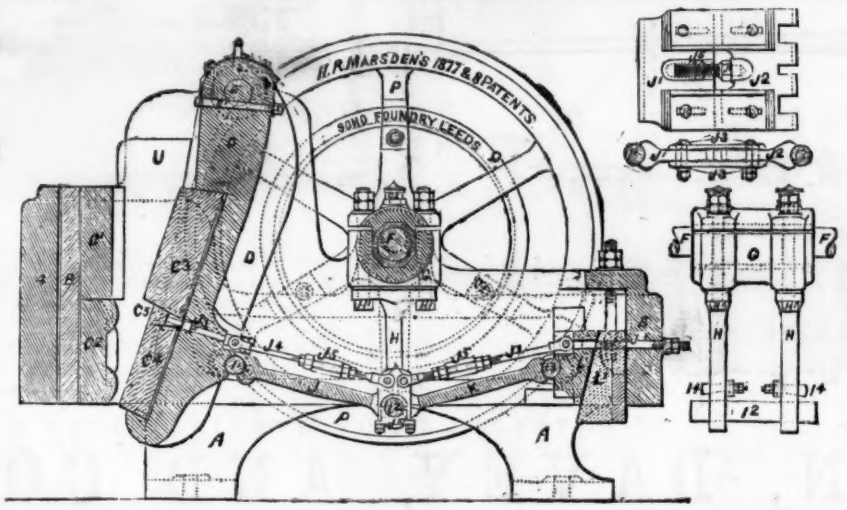

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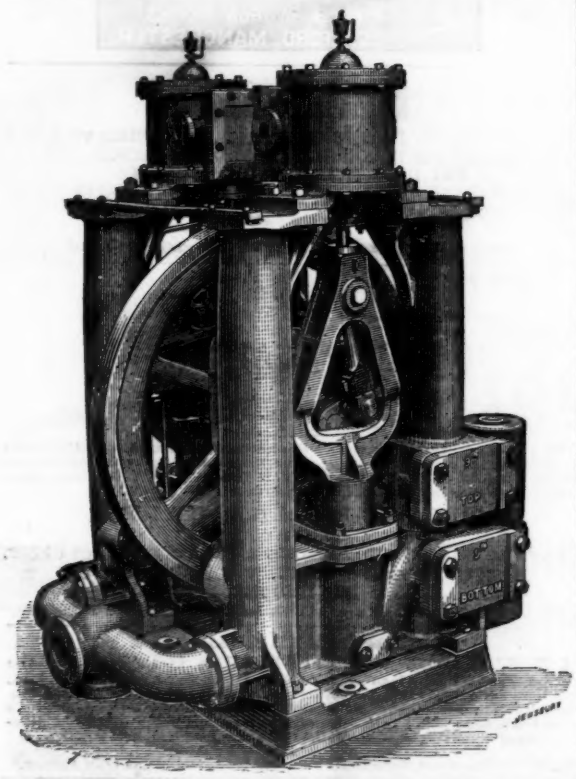

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